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ARCHEOLOGICAL TESTING AT FORT ST. LEON (16PL35)
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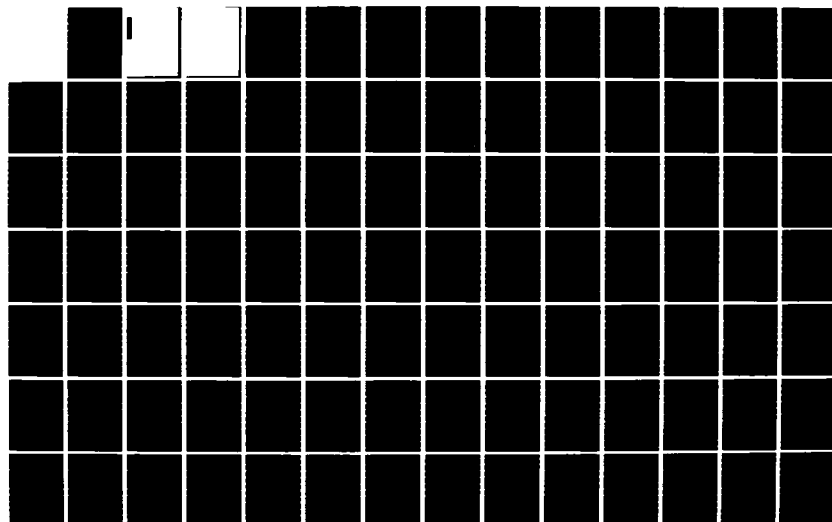
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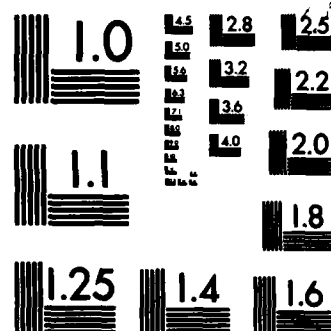
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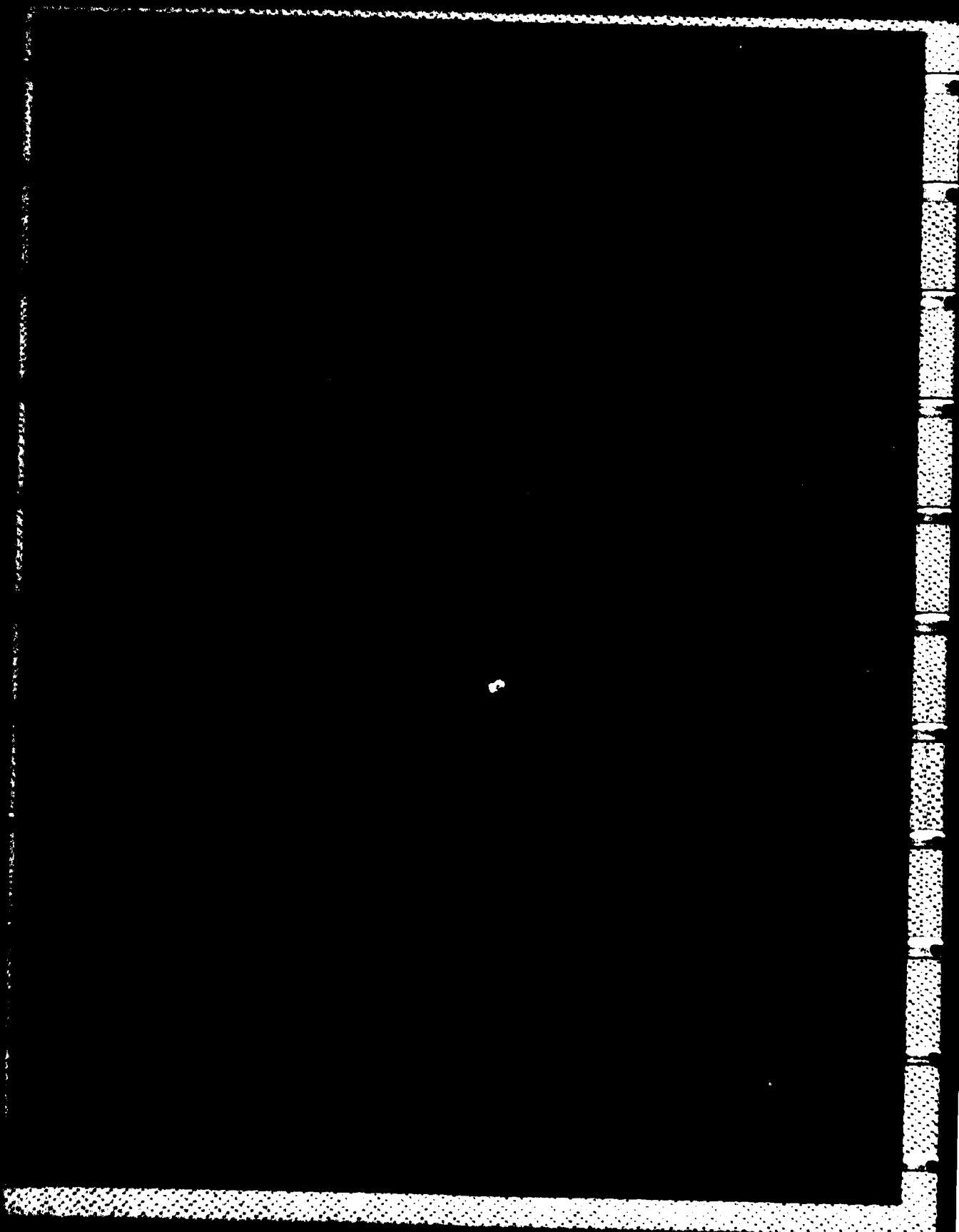
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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER PD-RC-83-04	2. GOVT ACCESSION NO. AD-A131482	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Archeological Testing at Fort St. Leon (16PL35), Plaquemines Parish, Louisiana.		5. TYPE OF REPORT & PERIOD COVERED Final
7. AUTHOR(s) Kathleen Gilmore Vergil E. Noble		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Institute of Applied Sciences North Texas State University, P.O. Box 13078 Denton, Texas 76203-3078		8. CONTRACT OR GRANT NUMBER(s) DACW29-81-C-0111
11. CONTROLLING OFFICE NAME AND ADDRESS Department of the Army New Orleans District, Corps of Engineers P.O. Box 60267 New Orleans, LA 70160		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE May 1983
		13. NUMBER OF PAGES 337
		15. SECURITY CLASS. (of this report) unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) <div style="border: 1px solid black; padding: 5px; text-align: center;">This document has been approved for public release and sale; its distribution is unlimited.</div>		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES A		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Fort St. Leon Plaquemines Parish, Louisiana Archeological testing Colonial French history, 1747-1768 geomorphology American military history, War of 1812 aerial photography English Turn remote sensing, magnetometry		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) ➤ Archeological testing at a site long known as Fort St. Leon (16PL35), Louisiana, was carried out from August 15 to October 15, 1981. The testing was based on models and hypotheses derived from extensive research concerning the history of the occupation of the site and from research into sites of the same time periods.		

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SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

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Twenty-two test trenches and ten test pits were dug. Two test pits revealed firm evidence of the American fort, but remains found of the French fort were negligible.

unclassified

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ARCHEOLOGICAL TESTING AT FORT ST. LEON (16PL35),
PLAQUEMINES PARISH, LOUISIANA

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Contributions in Archaeology No. 2

May 1983

Submitted in fulfillment of the terms of Contract
DACW29-81-C-0111 between the New Orleans District, U.S. Army
Corps of Engineers and the Institute of Applied Sciences,
North Texas State University, Denton, Texas.

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ACKNOWLEDGEMENTS

My appreciation to all who helped bring this research and the report to fruition; the crew members of the testing phase; Tom Ryan and Bill Muller of the Corps of Engineers, New Orleans and Roger Saucier, Vicksburg; Betty Swanson, Santa Fe; Carla Garety, Tulane University; personnel of the Tulane Hebert Research Center; the Burmasters of Belle Chasse; Liliana Zeigel, Paris, France; Billy Davidge, La. Department of Public Works; and the staff at the Institute of Applied Sciences, North Texas State University: Bonnie Yates, Nancy Reese, Gerald Blow, Elaine Curry, and Donna Argo. Sincere personal appreciation goes to Betty Lou and Rufus Kirk and to R.B. Gilmore.

K.G.

INTRODUCTION

English Turn Bend, a large meander on the Mississippi River, is 12 miles below New Orleans, and 78 river miles from Head of Passes.* It was at this area of the river in 1699 that Jean-Baptiste LeMoyne de Bienville ordered a British ship to turn back because the land belonged to the French. It has been known since that time as English Turn, "Detour des Anglais." The study area is a section of the bend on the right descending or west bank of the Mississippi River, which has long been known as the site of Fort St. Leon (16PL35). The area extends along the batture from English Turn Light upriver about 3000 feet. Loose sand covers most of the surface except near the riverbank where gray clay has been exposed by wave action. A thick growth of deciduous trees and shrubs covered the surface before clearing in preparation for testing. Along the riverbank, some large willows are growing. About 100 feet or less from the bank line, a bench has stopped a mass of debris composed of large logs, boards, styrofoam, and plastic bottles among other things. Remnants of the 1912-1913 levee bordering a fragment of the 1941 borrow pit are present on the landside of the area.

Several overall research goals emerged from a study of the site and the historical background. The first goal is the establishment of the location, site integrity, and research potential of the colonial and the American occupations, which must be ascertained before other goals can be realized.

The second goal is to delineate the lifeways of the occupants of the Fort and their interactions with the local plantation owners.

The third goal is to document archeologically the cultural changes that took place from one period to another. The area presents a unique opportunity to study the remains of three historical periods of differing culture--French, Spanish, and Anglo-American. Not only can military changes be studied, but also changes in economic patterns and ways of adapting to the local environment.

A research design (Gilmore 1981), including models and hypotheses to be tested, was prepared as preliminary to archeological testing. Background research is essential as

*Head of Passes is the point where the Mississippi River trifurcates before entering the Gulf of Mexico.

a prerequisite to any archeological project, but it is especially important for historical sites because excavation can then be designed to maximize information to be gained in a cost and time effective framework. Furthermore, archeological information can be interpreted with positive results. Consequently, the research design was generated principally from the historical material and with information from archeological sites of the same temporal and cultural period. Testing strategy was based on the models, and backhoe trenches were placed in areas with high potential for encountering remains of the fort.

The models contained in the research design are repeated in the section, The Models. They are refined with the knowledge obtained from the testing program and from additional documentary sources in the section, Refinement of Models and Hypotheses.

Effectiveness of the testing program was diminished by the persistence of groundwater in the excavations throughout the field season. Not only did this create severe problems for recovery of information from trench floors, it also weakened profile stability. Moreover, the continuing seepage hampered progress in the field and absorbed the time of several crew members in efforts to combat it.

Nonetheless, the strategy was sound and produced results in spite of the difficulties encountered. Use of the backhoe proved to be an effective method to inspect the project area in cross section. From this, a general understanding of the depositional sequence and the occurrence of cultural deposits was obtained quickly and efficiently. This information in turn facilitated the placement of controlled excavation units in areas of high potential.

A cultural zone was encountered, but because the remains found were not definitive, the hypotheses as stated in the Research Design can be neither rejected nor validated. Testing, however, did weaken but did not allow the total rejection of Hypothesis No. 2 which stated that the remains of the French fort were near English Turn Light.

The first section of the report, The Project Area, contains a description of the environment and previous archeological work, and a section, The Levee System, which relates the history of the levees in the project area. The Historic Background not only contains information from the Research Design (Gilmore 1981), but also additional documentary data. The section on the Models is virtually

the same as contained in the research design. Following that is Archeological Testing of Models and Hypotheses, which is a description of the test excavations and the results. Refinement of the Models contains changes and additions that resulted from the testing and from additional documentary information, and refined hypotheses are posed. The appendices contain a section on site significance and value and a plan for mitigation, artifact descriptions and tables, and individually authored articles bearing on the body of the report.

THE PROJECT AREA

Environment

The project area is situated on the right descending bank of the Mississippi River, approximately 78 miles upstream from Head of Passes. A humid, subtropical climate prevails throughout southern Louisiana, especially in the coastal region. The normal mean annual temperature, as measured at the nearby New Orleans Weather Bureau City Station, is 70.4 degrees Fahrenheit. The mean temperature for January, during the period 1951 - 1960, was 56.0 degrees Fahrenheit, whereas the mean temperature for July during that same period was 83.4 degrees Fahrenheit (US Department of Commerce 1964).

Precipitation gauged at the Naval Ammunition Depot (now the Tulane Hebert Research Center) during the period 1951 - 1960, averaged 61.90 inches annually. The mean number of days with precipitation $> .10$ inch was 76, and days with $> .50$ inch numbered 37. Snowfall is extremely rare in the project area (Baldwin 1973).

The project area, by virtue of its proximity to the Gulf of Mexico, is occasionally subject to hurricanes and other tropical storms during the summer and fall. These storms vary greatly, but generally they are accompanied by high winds and may render 10 or more inches of rain in 48 to 72 hours (Saucier 1963:6).

A comprehensive soil survey of Plaquemines Parish, Louisiana, is not yet available. However, the soils of the project area can be said to consist of clays and sandy alluvial deposits. These are a product of the shifting deltaic system of the Mississippi River. The west bank at English Turn represents a natural levee of the river, and the project area itself lies a short distance north of an abandoned distributary channel. The opposite bank is an aggrading point bar (Appendix B). As surveyed in 1951, the river is approximately 150 feet deep and nearly 2,500 feet wide at the bend south of the project area (Kolb 1962: Plate 7, Section X).

The project area is covered by a willow forest, typical of early successional stages on the Mississippi River batture. A dense growth of large willows runs adjacent to the levee toe. Saplings and immature willows, however, are predominant along the first terrace. These would indicate fairly recent disturbance or substantial inundation. A few larger willow trees occur at the water's edge. Cores from

some of the larger willows indicate they are less than 30 years old. Table 1 lists vegetation recorded on a south/north transect from the river to the levee.

Numerous cypress stumps also are found at the shoreline. Cypress trees, unlike willows, are typical of climax forests on the floodplain and require prolonged absence from the vagaries of a river system. Thus, the presence of stumps from mature cypress trees are good evidence of river encroachment.

Because of its location at English Turn, the project area is subject to a number of dynamic forces. Since the earliest occupation of the site, these forces of change have been of two sorts - natural and cultural. Furthermore, the interplay of human activities and natural processes have had, and will continue to have, an impact on the archeological integrity of Fort St. Leon.

The two most significant natural forces at work are lateral erosion and flooding. To a lesser extent, hurricane activities in this coastal region also have had an effect on the project area. These cataclysmic events, however, are brief and rare, whereas the hydrologic processes of the Mississippi River are long-term and regular.

The west bank, or right bank descending of English Turn is a cutbank along the project area shoreline. Thus, gradual westward movement of the river meander through current scour could have intruded upon the position of Fort St. Leon although it is unclear precisely how much lateral migration of the river bend has occurred since the site was occupied. It is estimated that the loss has been about 60-75 m (Appendix B). In view of the fact that maps of both forts show each located near the bank line, it is possible that bank recession has done some damage to the archeological context in that area.

A less dramatic, but increasingly significant cause of foreshore erosion is wave action. Most of the bank damage is produced by water craft wakes, rather than wind-generated waves. Such erosion is generally superficial, although it has become progressively worse as the volume and speed of river traffic has increased. Furthermore, when combined with the action of current scour, as at English Turn, the effects of foreshore erosion are magnified greatly (Shen 1971: 19-25, 19-26).

The most radical impacts to the geomorphology of the project area have derived from seasonal floodings of the

Mississippi and human attempts at flood control. Floodwater deposition and erosion, development of the present levee system, and the dynamic interplay of these factors undoubtedly have modified the site structure since the 18th century. The precise form and extent of this change, however, is still unknown.

Overbank flooding is generally characterized by sediment deposition. Suspended sediment in the stream will vary, but can approach 17% of the volume in severe floods. Coarse-grained particles are laid near the normal stream channel, and deposition is greatest in that area. Finer sediments are carried farther into quiet backwaters. Containment of waters within an artificial levee system, however, can alter this natural distribution of deposits.

Vegetation, if present on the foreshore, will tend to retard soil erosion and promote sedimentation. In addition, vegetation can entrap driftwood and other floating debris (including cultural materials foreign to any occupation) within the study area which then may be incorporated in the deposits. It is also possible, however, for trapped materials to create eddies, which in turn remove sediments.

More significant erosion can be caused by flood waters in areas of high flow velocity. In some instances, scouring action of swift water can strip vegetation and carry off significant amounts of soil. It is possible, therefore, that removal of older deposits may precede new deposition during flooding (Ward 1978: 62-65).

Finally, the possibility of stasis also exists. There were undoubtedly times in the past when neither erosion nor deposition occurred during the yearly cycle. In such instances, however, the presence of a stable land surface would be conducive to soil development and the accumulation of vegetation cover. No strong indication of this was noted in the excavation profiles.

It is likely that the sharp bend at English Turn occasionally promoted all such processes. There is also a third possibility, that is, neither erosion nor deposition. There could have been times when the land surface was static wherein a soil formed under a vegetation cover. Therefore, it is reasonable to assume that the present configuration of soils did not result from simple continuous accretion. Rather, it is probable that alternate episodes of deposition, stability, and removal have occurred over the years. Accordingly, much of the soil column could be of recent origin, and it is possible that any in situ

archeological materials within the project area could have been swept away, or at least disturbed. It is perhaps more probable, however, that any cultural remains would have been, in effect, sealed by flood deposition.

Flood control measures in all probability have had an impact upon site integrity in the project area. Borrowing activities for the construction of the several levee systems undoubtedly disturbed some aspects of the site to a degree, and some aspects may have been utterly destroyed.

Finally, the devastating effects of hurricanes cannot be discounted as a possible factor influencing site integrity. Although severe wind storms this far inland would not cause appreciable deposition, they may cause scouring, especially if trees are uprooted. The soil matrix thus loosened may be carried away by runoff from associated rains. Thus, archeological evidence of the several occupations believed present in the project area could have been significantly affected by one or more of these events.

It should be clear from the above discussion that both the natural and the constructed environments may have significantly altered the character of any site located within the project area. The number and power of various dynamic forces at work here present a high probability that some damage to site integrity has already occurred. An important objective of the archeological testing program, therefore, was to determine the extent of disturbances inflicted upon the area.

Finally, it is necessary to note that environmental conditions also have a bearing upon any data recovery plans. River stages in the New Orleans area vary from 20 to -2 feet mean sea level (msl) (Kolb 1962:8). It is preferable that the river be at 2 feet or lower for excavation to take place. Thus, flood cycles restrict any efforts in the project area during low water period. Low-water stage is generally in the fall and winter months, from August through January. More significant, however, are the effects of the river upon the local water table. With the river immediately south and with water often impounded in the borrow pit to the north, groundwater is generally high on the batture. This presents a severe problem for undertaking archeological excavations in the project area. Indeed, without adequate control of groundwater seepage, appropriate data recovery would be virtually impossible.

The Levee System

Levees were built around New Orleans not long after it was founded. The Council of the Indies proposed that Pauger (chief engineer) "visit and survey all plantations that are below New Orleans. He was to record all buildings, number of persons at each, survey and fix boundary marks, and record who had built levees" (Rowland and Sanders 1929 vol.2:447).

Apparently Pauger also had a plan for flood control since Flint (1832 vol.2:26) writing in 1832 tells of Mr. Tomasi who visited New Orleans "early in the forties and wrote a brochure on the improvements of the Mississippi which, it is said, led to a duel. Tomasi simply pointed out the value of the system outlined by Pauger in 1719-1727 adding his own idea of setting out treble lines of stout willow plants along the embankments which he suggested."

By 1731, the levee system extended 30 miles above English Turn to 12 miles below. In 1732, Governor Perier decreed that landowners along the Mississippi must make a clearing along the river front to the depth of 3 arpents (1 arpent equals 191.8 feet or 58.48 meters). Landowners were ordered to plant a 12-foot green oak or cypress post, 8 feet under ground with the part above ground not less than 4 feet in circumference. The posts were to be 8 toise (1 toise equals 6.4 feet or 1.95 meters) from the water and an arpent apart, and were for the convenience of landing. Levees 6 feet wide and not less than 2 feet high were to be built near the water's edge (Flint 1832).

The high water of 1735 damaged the levees, and repairs had to be made along the entire system. The next year all landowners were to have the levees in good condition by January 1, 1744 or have their lands confiscated (Flint 1832:27).

These levees were dug and placed by manpower, using wheelbarrows for the transportation of dirt, which had to be close by. The levees were small and labor intensive. According to Elliot (1932:182), a more or less standardized procedure gradually developed. He notes, "Plank runways supported by three-legged timber supports extended on approximately even grades from the borrow pit to the lower section. Borrow pits were on the riverside, the land side or on both sides as convenience dictated."

The drawing of the French fort by DeBatz (Figure 3) shows "small levees" at G and Z. The epaulement (shoulder)

(Figure 3, E), however, may have served as a levee as well as a breastwork. On the plat of the Constance Larch property made in 1805 by Lafon (Figure 29) at the upriver property line (that is, the one adjoining the Joseph Dupard line) is a notation "Veille levee de la Batterie" (old levee of the battery) indicating that remnants of the French fort were still in existence in 1805.

By 1752, levees had been built to about 30 miles above New Orleans and on the right bank "down to the old Fort St. Leon, now the plantation of E.F. Villere, Esq," according to Forshey writing in 1874 (1874:268).

Levee construction by individuals was replaced with construction by a combination of owners and communities. The Mississippi River Commission was created in 1879 by Congress and was charged with making surveys and studies of the river. In the following years, the primary function of Federal work was navigation with flood control incidental (Encyc. Brit. 1949 vol.15:608).

In 1882, the following specifications for levees were prescribed by the Mississippi River Commission:

...crown width 8 feet, except where otherwise directed by the engineer, side slopes to be designated by the engineer; borrow pit to be located not less than 20 feet from the riverside toe of the structure; ground occupied by the levee to be cleared of trees, stumps, and all other perishable material; and trees and stumps to be cut level with the surface of the ground. When the levee was less than 5 feet in height, all stumps were grubbed out. The entire surface of the levee foundation was broken by spade or plow in order to bond with the levee section. A muck ditch, 4 feet wide at the top, 2 feet wide at the bottom, and 3 feet deep was required....The muck ditch was to be located on the riverside of the center line and 3 feet from that line (Elliot 1932:173-174).

A map dated 1889 entitled "Fort St. Leon Levees Section No. 2" (Figure 31) shows what appears to be a levee and a proposed setback as well as a section to be raised. This is probably of the project area. The drawing is imprecise and has no identifying landmarks. The configuration of the 1895 river bank (Figure 17) is similar to the 1889 map (Figure 31), and the measurements of the levee lengths agree somewhat. Since the map is dated 1889, one would assume the

levee shown was set before 1889, and the proposed setback would be for 1892. If this is so, the pre-1889 levee seems to have been near the 1912-1913 (Figure 32) borrow, probably indicating that pre-1889 levee material was incorporated into the 1892 levee, and the state set of 1912-1913 was in the same position as the 1892 levee. It is possible however, the proposed levee on the 1889 map was not built.

On the other hand the state set of 1912-1913 (Figure 32) scales 1450 feet, whereas the levee shown on the 1889 map scales 1460 feet. This may be mere coincidence, yet it is possible the 1892 levee was built or was being built in 1889 and the Federal government completed it in 1892 as indicated in a following paragraph, or that the 1892 set missed the project area. It is also possible the pre-1889 levee may have been the levee of the fort (see Appendix B).

Specifications for slope were changed in 1896, but these proved inadequate for the floods of 1912-1913 and were again changed in 1914. It was not until June 1, 1892 that work in the Barataria Levee District, which includes English Turn, was done by the U.S. Government. It was then that new levees were built at "Upper Fort St. Leon" and "Lower Fort St. Leon" among others (Smyth 1893 pt. 5:3902). Lower Fort St. Leon was 1 mile below Upper Fort St. Leon, with the former possibly coinciding with the project area. The length of the levees was about 1540 feet.

The Lower Fort St. Leon levee was described as follows:

Fort St. Leon Lower (981.5 R). This is a new line. The old levee abandoned by this line is of low grade and inferior section. Six hundred and twenty-eight and two-third linear yards of 6-inch porous tiles were put in the toe of the land slope. Maximum depth 2.7 feet, minimum 1.4 feet, mean 2, maximum slope per 100 feet 0.2 foot, minimum 0.1 foot, mean 1.7. This drain has three double outlets, one at 2 plus 97, one at 9 plus 48, and one at 15 plus 40.

Revetment was not built on this levee as embankment is protected from serious wash by willows and high batture." (ibid:3902-3)

The state set of 1912-1913 seems to be an enlargement of the 1892 set with the borrow pit stopping short on the west of the fort location (Figure 32). Elliot (1932:175) noted that by 1932 certain practices in building levee foundations had become standard. In preparing it, the entire foundation, plus 5 feet on each side, all trees,

logs, brush, and debris were removed and the surface "grubbed." The "inspection or muck ditch" 6 feet wide at the top, 4 feet wide at the bottom, and 6 feet deep, was dug along the center line of the foundation. "All logs, decayed matter etc." (ibid:176) were removed from the ditch and then the ditch was filled. All sloughs, old pits, ditches, or depressions within 100 feet of the levee on the land side and 40 feet on the river side were usually filled to the natural surface of the ground. Clean earth "free from all foreign matter" (ibid: 186) was used. Where levees were enlarged, it was done on the riverside, and as a rule no muck ditches were dug for enlargements.

A setback in this area was completed in 1941 (Figure 32) with parts of the 1912-1913 levee being enlarged. The borrow destroyed some of the 1912-1913 levee and probably used some of the material for the setback and enlargement. The borrow pit was extensive (Figure 32) most of which is not now (1981) apparent on the surface. In 1980-1981 the levee was covered with concrete.

In sum, levees have been built in the project area since the early 1700s. Drawings of both the French and American forts show levees bordering the water's edge. Most early levees were low and near the bankline. A levee was present in the late 1800s which was set back in 1892. This levee was probably 100 feet or less landward from the present bank line and may have been the same as the fort levee. The borrow area may have been almost anywhere if it was built before 1882. A map of the 1892 setback of the Lower Fort St. Leon levee appears to be in the project area, on the other hand the project area may be in the mile between the Upper Fort St. Leon levee and the Lower Fort St. Leon levee. The state set of 1912-1913 seems to be an enlargement of the 1892 levee, but this cannot be demonstrated at present. The borrow pit for the 1912-1913 levee stopped short of the fort location. The setback of 1941 (about 200 feet to the crown) had an extensive borrow pit, although old levee material probably was used in its construction. It is not known at present, if this pit might have destroyed fort remains. It seems unlikely, however, since clay, which is at the apparent occupation level, was not used in levee building (Saucier 1981).

Taking into consideration methods and history of levee building and the archeological findings of the testing phase, it appears likely that most of the surface material, the upper 2 m more or less, has been disturbed, and there is a high probability the fort remains are below the disturbance.

Previous Work

The project area has long been known as the site of Old Fort St. Leon and consequently has been subjected to relic collecting, although it is unknown if actual illicit digging has taken place. An historical marker on the land side of the levee points out the location.

In 1976, J. Richard Shenkel, University of New Orleans, under contract with the Corps of Engineers, made a reconnaissance of the project area. He recommended a detailed literature search and archeological testing to ascertain research potential.

These recommendations were carried out, and the University of New Orleans subcontracted two parts of the project: (1) the documentary search was done by Betsy Swanson (with help of Sally Evans), and (2) the archeological testing and the analysis program were done by Coastal Environments Inc. (Shenkel, Beavers, Swanson, and Gagliano 1977:1-2). This project produced a Map-of-Record (Figure 24) of the project area and an Historical Overview (Shenkel, Swanson, and Evans 1978). Full use was made of these reports in producing the research design and in this report.

The 1976 archeological testing entailed systematic coring of the area on the batture behind the remnants of mortared brick that are in the river near the shoreline. The area covered was from the concentrations of brick to near the base of the old levee, 60 m in length and 45 m in width. The corings were spaced at 5-m intervals except in two areas near the base of the old levee: one on the eastern side and one on the western side where tightly spaced corings were made. Full information is not included in the report (Shenkel et al. 1977) on the tightly spaced corings, but in the western area almost whole brick and charcoal fragments were retrieved from about -.91 m.

The second area of tightly spaced corings on the eastern side of the site encountered a layer of hard gray clay about 40 cm below the surface. In addition to bricks and brick fragments, mortar, oyster shell, wood, bone, charcoal, and coal were found in the borings. A contour map drawn by the present project on top of the bricks above sea level generally reflected the surface.

Two test pits (each 1 m x 1 m) were excavated: one north (landward) of the brick concentrations and one downstream near the English Turn Light. The one near the

brick concentrations, Test Pit 1 (Figure 11) had basically two layers of soil. The upper layer of brown silt, possibly deposited in the last few years, contained brick which were not in situ. The layer below this is a water-laid deposit of gray clay with a few silt lenses intermixed. According to Shenkel et al. (1977: 4-16) this layer probably accumulated over the last 100 to 150 years. The test was carried to a depth of 40 cm and shovel tested to 120 cm. Few artifacts were found and none of these were diagnostic.

Test Pit 2 was a 1 m x 1 m excavation just north of English Turn Light. This area is where the most artifacts have been collected in past years. These surface-collected artifacts make up the bulk of the artifacts analyzed (Shenkel et al. 1977).

Two depositional zones, as in Test Pit 1, were encountered in Test Pit 2, but additionally, a light brown silt zone was below the clay layer. Most of the artifacts were above this 10-20 cm level, and it was concluded that this was probably the ground surface at the time of occupation.

Most artifacts recovered and analyzed were early to mid-19th century in origin. A kaolin pipe bowl found in Test Pit 2 was estimated to date in the first two decades of the 19th century, but it was noted that it could date to the last two decades of the 18th century. One "delftware" sherd was found in the area of Test Pit 2, and the authors (ibid:5-12) describe a group of earthenware sherds with crumbling glaze and pinkish clay bodies which could describe an 18th century tin-glazed ware. These seem to have been found in the area of Test Pit 2, but this is not certain. Few analyzed artifacts were from the Test Pit 1 area, that is, the area north (landward) of the mortared brick concentrations.

HISTORICAL BACKGROUND

The nucleus of this section was written by Swanson and Evans (Shenkel, Swanson, and Evans 1978). Full credit is extended to them as principal source. Most additions to their research, principally from documentary sources, have been made to the Colonial Period section, and some additions and changes were made in the American and Non-Military sections. Documentary references are indicated by a number in brackets that corresponds to numbered entries in the Documents Cited section.

This Historical Background is oriented toward providing information for archeological exploration and for expected physical cultural remains. In the research design (Gilmore 1981), information from the Historical Background was used to formulate a model for the location of the forts and of expected physical cultural remains. From the model an archeological testing strategy was then formulated for the site. The background places both the French fort and the American fort in an historical, international context, but details of world-wide happenings have not been used since those events have no direct bearing on the archeological exploration.

With the additional information obtained from the Historical Background and archeological testing, changes have been made in the original model (Gilmore 1981). These can be found in the section, Refinement of the Model and Hypotheses.

Colonial Period

English Turn entered history and got its name in 1699 when Jean Baptiste LeMoyne de Bienville encountered and ordered a British ship to leave the river. Bienville and his party had been exploring the river in two canoes, but to strengthen his position, Bienville told the British commander that a French army was upstream (which was untrue), and that they were not in the Mississippi River at all. The English turned and left the river.

By 1714, when Natchitoches was established, Mobile and Biloxi were viable villages. A settlement was needed on the lower Mississippi, however, to help secure the coast, and the task of forming this settlement was given in 1718 to Bienville, who was to be the governor. Plantations were already being established along the river through concessions and the Company of the Indies owned by John Law.

By 1721, there was a population of 1,084 around New Orleans with 182 at English Turn and Les Chaouachas (Conrad 1970 vol. 2:6). Chaouachas was the name of an Indian group shown on contemporary maps below English Turn on both sides of the river. It is not clear on which side of the English Turn the 182 people were living, but it is probable that at least part were living at the settlement on the left descending bank. The Chaouachas Concession originated in grants from the Company of the West (Indies) in 1718-1719 (Dart 1925:589). It is downriver from English Turn Bend on the west bank where the area is still known as Concession.

In 1722, Bienville had orders to establish three batteries and a warehouse at English Turn Bend to prevent hostile vessels from entering the river (Rowland and Sanders 1929 vol. 2:256). Where or whether these were built is not known at present.

Bienville reported in 1725 that the Chaouachas Indians were 25 leagues from the mouth of the river on the right as one goes upstream, and they had been reduced to forty warriors. He made them settle down and stop their wandering in 1712 at a place "near us where it still is today" (Rowland and Sanders 1932 vol.3:527). He noted they were "slothful and indolent" and corn was the "only resource that we can derive from it." They were destroyed on orders of Governor Perier after the Natchez massacre, sometime before March 18, 1730, when Perier reported that the "negroes of the Company" destroyed the nation of 30 men with as much promptness as secrecy" (Rowland and Sanders 1927 vol.1:171).

By August 1729, bricks were being made in New Orleans in partnership with the Jesuit fathers in quantities large enough to build the New Orleans prison entirely of bricks (Rowland and Sanders 1929 vol.2:671). Potters had come to New Orleans in 1728 (ibid:672), perhaps from Rouen, France, since one potter was Sieur Caussey, and a potter, Paul Caussey, was known to have been in Rouen in 1720 (Giacomotti 1963).

All descriptions of English Turn Bend at this early period emphasize the sharpness of the curve, which is not conducive to good winds for sailing ships, many of which would have "to wait for a day to a month" for a favorable wind. Passengers were likely to debark and finish their journey by land along the hard surface of the natural levee (Le Page du Pratz 1774:48). On the west (right descending) bank, a road, which became known as "Cutoff Road," led to a place across the river from New Orleans and which is shown on present day maps (Chalmette Quadrangle 1972) as Cutoff.

A road labeled "Cutoff" is clearly shown on several 19th century map (e.g., Figure 16).

Pierre de Rigaud de Vaudreuil was appointed Royal Governor of Louisiana in 1743. As danger of war with England increased, Vaudreuil appointed Bernard Deverges, an engineer, to strengthen the defenses of the colony. Plans for two forts at English Turn were made in 1747 (Figures 1 and 2).

Deverges advised Vaudreuil that English Turn was the only possible site on the river that could be equipped with 20 cannon, and being only five leagues from New Orleans, it would be successful in deterring an enemy. It was a natural fortification site, on higher ground, heavily wooded, and surrounded by swampy land. The ships could pass

only with southwesterly or westerly winds, which are very rare and last only briefly during the period from August to January. That is the best time to undertake a conquest of this area, for the river is low at that time...

Moreover, it should be noticed that amongst the habitations established at this place there were woods filled with brush and thick cane interlaced with brambles that end in marshes tranversed by creeks and mushy ground. It would be reckless to try to cross this if we had some good retrenchments defended with some troops. Another advantage is the ease with which all of our forces could be thrown in there at a moment's notice. With these considerations in mind, we must not hesitate to select this place for fortifications of a last resort. Therefore, we have decided to establish on each side of the river, at the point where ships are forced to go to catch the westerly and southwesterly winds, a shoulder (epaulement), supported with a cleonage,* in accordance with the attached plan and design of Sr Desverges. To accomplish this, I have ordered jointly with Mr. LeNormant, the inhabitants of the city (i.e., New Orleans) and its environs to supply one fifth of their negros for six weeks. With these corves, we have been able to complete about one-half of the

*Cleonage or clayonnage, a covering of earth and stakes.

work in earth and fascines, for at first we lacked tools and equipment and then came the rains. I did not feel that I could request any more of the inhabitants, for most of these still had part of their harvest on the ground.

I observe that to make these forts last, given the present situation of the passes, it would be essential to have the shoulders (epaulements) covered with masonry, for the support with a cleonage will last only for one year or eighteen months, in order to protect them from damage by high water. I have attached an estimate by toise of the masonry, hoping that the expense will be approved.

I reckon that in a few days ten 18 pound canons will be in the battery of each fort. It would be nice to think that His Majesty would find it appropriate to send sixteen 24 pound canons with balls and fittings and fourteen 18 pound to fill all the embrasures that cover the river. The retrenchments en redans that protect these batteries from the land side must be defended only with four and six pound pieces from New Orleans. It is certain that with the additional artillery one could hope, with the troops and the inhabitants assembled, to foil the attacks of an enemy who had forces much superior to ours. (1746) [See Documentary Reference 1].

Maurepas, the minister in Paris, wrote to Vaudreuil September 30, 1747 concerning masonry work at the Turn. He remarked that these works have been constructed with "greater solidity than those which Sr Deverges has constructed up to this time in the colony." Maurepas noted that "His Majesty wished that such work (i.e., masonry) be deferred until the coming of peace" [Doc.2].

Both forts were proposed to have been classic four-bastioned squares surrounded by a ditch, covered way, and earthen glacis. Projecting from the riverward face of each was an artillery battery. The fort on the right descending bank, referred to as Batterie de l'ance, had projected emplacements for 23 cannon arranged in a semicircle. The left bank Batterie de la point had projected emplacements for 25 cannon arranged in a "cupid's bow." Each fort was also to have smaller outlying batteries located both upstream and downstream from the main battery and connected to it by earthen levees. It is noted on the

plan that construction on the main batteries of the forts began in September, 1746 (Figure 1). In an accompanying plan, details of the semi-completed batteries depict each with five small bastions projecting from the rear of the battery and surrounded by a ditch. It further shows that each was sufficiently complete to mount 10 cannon with the remainder of the parapet elevated to the height of the platform. The more elaborate full fortification had not begun (Figure 2). Apparently Sieur de la Torre was the commander during the beginning stages, since Vaudreuil ordered Lt. Claude Joseph Favrot to relieve de la Torre "in command of the fort at English Turn" by a letter of October 3, 1746 [Doc.3].

Yet Vaudreuil did not seem to have complete approval of the King since he wrote to the Minister on May 15, 1747 stressing the positive points concerning the site and urging the king to approve the project. He wrote,

The ground at the English Turn is 9 feet [1 French foot=12.8 inches] above low water [Doc.4].

It is protected from flooding by levees that go from there upriver. At present, when the river is at its highest level, there is a space across the batteries of 250 toises (1600 feet) in depth, where the waters that return from behind do not penetrate. Thus the placement of the projected forts would be sufficiently back so that they would not be damaged. I urge the king to approve this project...." [Doc.5].

LeNormant, commissaire-ordonnateur, had never quite agreed with Vaudreuil about the fortifications at English Turn. When he left Louisiana and was replaced by Michel he stopped at English Turn and made the following report as of June 1, 1748:

The king's frigate having been stopped at the English Turn, I profitted from the time to visit the works and to examine the terrain for the feasibility of covering the shoulders of the batteries, that are made of earth, clayonnages, and fascines, with masonry. These batteries have been placed too close to the river. To prevent them from eroding they have been faced this year with stakes and pounded earth, which has again meant new expenses that could have been avoided if the batteries [were] farther from the river, whose banks are either of sand or mud. Therefore, I do

not concur with the proposal to cover the batteries with masonry. In truth, things are not solid now. However, with some maintenance it could still last a certain time and serve until you can make a final decision on how best to fortify the river.

I agree, Monseignor, that at the present it is perhaps correct to prefer the English to the Plaquemines Turn for locating batteries to defend the river.... [Doc.6]

Apparently Vaudreuil conceded on the question of masonry covering when he wrote to the Minister on September 10, 1748.

...that there is no longer any question of covering the shoulder [epaulements] of the forts at the English Turn with masonry and that henceforth all the maintenance will be done in cleonage and by corvee... [Doc.7].

On November 15, 1748, Vaudreuil found it necessary to retain Deverges at English Turn for "repairs in front of the great batteries where the waters from the river, which have been whipped up this year by frequent strong winds, have done considerable damage" [Doc.8].

Bernard Deverges, because of the illness of Ignace Broutin, Engineer-in-chief to the King, had become one of the most important engineers in the colony. He had been assigned the task of designing the forts at English Turn and the supervision of their construction. When Vaudreuil retained him at English Turn, he wrote glowingly of his accomplishments stating:

Deverges is the only one who knows the map of the river perfectly. He has had more than twenty-five years experience and good work in the colony. Settlers never build on the river without consulting him. He has executed other works and projects with ease--has great judgement, zeal, and prudence." (Quoted in Shenkel et al. 1978:15).

Alexander DeBatz, architect and draughtsman, drew a plan of the forts at English Turn "on the spot" April 12, 1749 (Figure 3). The legend accompanying the drawing indicates the various structures around the fortification. Part of the Great Battery had been built in 1747 (Figure 3, B), but the upriver part had not been completed in 1749

(Figure 3, C). The DeBatz plan shows the same projected battery as the earlier 1747 plan (Figures 1 and 2) but differs in the rest of the shape.

The first design of the structures intended to occupy this favorable position on the Mississippi was on a rather elaborate scale. The size of the bastions and the thickness of the outer walls of the earlier designs were on a grander scale than the forts actually built. The construction of the fort must have gone on at a very slow pace because work began in 1746, and by 1749 the fort still was not completed. It was constructed of earthworks strengthened by fascines, i.e., bundles of sticks. The legend accompanying the plan of the fort (Figure 3a) described the materials used: "palissades six inches square in size and twelve feet long, pointed at the top one foot and at the bottom which is in the ground, blackened at the fire, the said enclosure pierced with 387 loopholes for gun fire."

Some concept of the composition of the troops at the fort can be gained from a roster of names of 13 companies made in 1745 [Doc.9]. The roster does not give the location where the companies were serving, probably because they were rotated frequently. Generally there were three to five officers consisting of captain, lieutenant, and ensigns. These officers had no dits ("otherwise known as" McDermott 1941:67) beside their names on the roster. Noncommissioned officers were: sergeant, usually two; corporal, usually two; enspessades, usually two; eagle cadet; cadet; fife player, all companies did not have a fife; and drummer. The fusiliers were 35 to 40. All noncommissioned officers were listed with dits. These were additional names that "originated in nicknames used to disguise the army recruits" (ibid:67). The noncommissioned rank enspessades apparently came from the 16th and 17th century rank lancespessade (Huguet 1925) which became anspessades (Kennett 1967: Table 1), with the further change to enspessade taking place in Louisiana.

The Swiss Company's roster, which is in addition to the 13 companies, does not contain the names of the soldiers. This company had a little different structure with a commanding captain; lieutenant captain; 1st, 2nd, 3rd lieutenants, and an ensign. There were 8 sergeants, 1 surgeon, 12 corporals, 4 Trabauts [?], 4 drummers, 112 soldiers, of which "5 soldiers were at the farm and 3 had gone to France" [Doc. 9].

Work was proceeding at English Turn in 1749 but may not have gone beyond April, the month DeBatz made his drawing,

since expense accounts for February, March, April, May, June, and July [Doc.10] list no expenses to be paid for English Turn after June. On the other hand, these may not be complete accounts.

Listed on the account for April 1749 under the heading of Detour des Anglaise, subhead Fortifications, de Mazan was paid 2,837.16.8 [Livres] "for the balance of the work done in 1748 at English Turn" [Doc.10]. Also in April, in a different citation, Dubreuil was paid 4,236.15.4 [Livres] "for balance of work which had been done at the Turn." Dubreuil was the principal builder for the King's works (Wilson 1971:123) and was paid in March for work and repairs probably done in February at Bayou St. Jean and other fortifications in New Orleans, implying the work at English Turn was done in March for which he was paid in April. Since no other large amounts were expended, through July at least, it is possible work was halted in March.

Other expenses listed were the payment to a corporal and three soliders "for having changed the place of cannons" of 5.0.0 [Livres] in April. Martin Boulanger (or Martin, a baker) was paid 30 [Livres] per month for March, April, May, and June; he is not listed in July. In May, Prevost was paid 260 [Livres] for 52 pickaxes, but this purchase may have nothing to do with the forts, and may not have been the Prevost who was owner of the English Turn concession.

The Turn was not garrisoned from at the latest January 27, 1750 until the spring or summer of 1751. Michel wrote to the Minister on that date [Doc.11] that since the forts and batteries at English Turn needed repairs, it would avoid these expenses during peace time to relieve the garrison. The cannon and equipment were stored on both sides of the river. The security of one was placed with Prevost who was the owner of the land on which the fort was located. A guard was placed at the storehouse on the other side. An overseer "of the works at the Turn," who was a cannonier as well as assistant to the storekeeper, was left as caretaker; but by September, 1752 as Michel wrote to the Minister "when the garrison had been gone 3 years," the garrison had been reestablished "bigger than ever" [Doc.12].

The two forts at English Turn had 200 men (4 companies) in 1751. A distribution of troops of Louisiana in 1751 shows 37 French companies and one Swiss company of 150 men, totaling 2000 men, but also written in the margin was an additional 200 men, or 4 companies "of the turn." These 4 companies are in addition to the 37 companies of the other posts [Doc.13]. It was on May 21, 1751, that Vaudreuil and

Michel wrote to the Minister about the troops at English Turn:

If you do not approve of that solution [building more barracks in New Orleans we will be obliged to put the excess troops at the English Turn, making there the necessary repairs and chimneys for winter use. This would be the easiest way to avoid expense. It would be no trouble to relieve the garrison every month like the neighboring posts. [Doc.14]

If an account of the forts and number of men garrisoned in Louisiana given to Governor Dinwiddie of Virginia by a French deserter can be relied upon, there were 150 soliders and 30 cannons at 2 forts of earth in 1752. This account also lists 40 habitations and many Negroes employed cultivating indigo at English Turn (Pargellis 1969:12-16).

The Marquis de Vaudreuil was made governor of Canada and Chevalier de Kerlerec was sent to replace him, arriving in January 1753. Kerlerec immediately went on an inspection tour of the "two forts of the English Turn" with Vaudreuil, d'Auberville the ordanateur, Deverges, the chief engineer and DeSalles, in charge of artillery. He reported to the Minister [Doc.15] that the forces and fortifications were in good shape, but there was not enough artillery, and that the artillery present was defective. He also wanted to see the condition of the "new settlers" for himself and had them come to "the forts" to hear their complaints. He had de Vilmont, "commander of the two forts," and the storekeeper take notes so that the most deserving could be furnished with provisions [Doc.15].

An inventory of artillery in Louisiana reported by Kerlerec and d'Auberville on April 24, 1752 listed the following at English Turn:

	Shot at English Turn
30, 18# guns	1247, 18#
4, 8#	522, 8#
4, 6#	200, 6#
4, 4#	330, 4#

in addition one light mortar with 100 balls [Doc.16]

This inventory shows English Turn to be the most heavily armed post in French Louisiana.

The French and Indian War between the French and English in North America began well before its counterpart in Europe, the Seven Years War, which began in 1756. The forts at English Turn did not appear to be in readiness. Kerlerrec had asked on June 24, 1755 to have the "Grand batteries as well as those that are in front" repaired [Doc.17]. He wrote that they were in terrible condition as was other equipment of the artillery. All lacked platforms and carriages. He had determined on inspection that all the platforms should be remade and that cannons and other equipment should be remounted [Doc.18]. He felt he could not count on the prompt execution of the work, and he was lacking "cannons, balls, artillerists and troops." He also had permission to proceed with a shoulder [epaulement] "for each of the advanced batteries at the Turn."

"These," he wrote, "will go as far as possible, up to the unusable deep earth. All with an abatis of wood, presenting the top and right [side] of one and the left of the other. The two shoulders will be supported with 3 or 4 cannon of 4# balls." After providing the two forts of the Turn he found he was depleted of troops [Doc.19].

By October 1755, when Kerlerrec wrote to the Minister [Doc.20] the "rebuilding of the four batteries at the English Turn" was well along, and that soon they would be able to mount the 29 cannon of 18-pounders that they had there. He was trying to finish the four small batteries "above the first ones" of four 18-pounders, in order that the forty-three 8-pounder cannon he had requested could be received. It appears doubtful if all these plans reached completion or that the 43 cannon were ever received.

A budget for Louisiana for the year 1756 signed by d'Auberville [Doc.21] shows the following:

Storekeepers' salaries:

New Orleans	1200 livres	
Mobile	1000 livres	
Balize	1000 livres	
Detour	800 livres	
Illinois	1000 livres	
Arkansas	800 livres	[Doc. 21: fol 85]

Surgeons' salaries:

Mobile, Balize, Illinois	1000 livres each
Detour	600 livres
Arkansas	400 livres [Doc.21 fol 87]

Bonuses for post commandants:

Mobile, Natchitoches,
Arkansas, Balize, Detour 600 livres each [Doc.21 fol 89]

Wages and expenses for 4 bakers:

New Orleans
Mobile
Detour
Poste des Allemands 1500 livres total for the 4
[Doc.21 fol 93]

Salaries for overseers of works:

New Orleans 720 livres
Detour 600 livres [Doc.21 fol 96]

Two advanced redoubts on either side of the river below English Turn were completed about October 1757 [Doc.22], and a shoulder was being constructed "at the side of Fort St. Leon, which is also to stop the enemy in case of a descent" [Doc.22]. This is the first mention that we have found of Fort St. Leon by that name.

The French Fort Duquesne at the forks of the Ohio River was captured by the British in late 1757. The war was indeed becoming serious for the French. Kerlerec was constantly appeasing the Indians to keep them faithful to the French (Fortier 1904:127). He found it necessary to go to Mobile early in 1759 perhaps for this reason. Belle-Isle, who was to be in charge during Kerlerec's absence was left detailed instructions [Doc.23]. One hundred Negroes were to load the fire rafts on both sides of the river at the forts St. Mary and St. Leon. These Negroes were to be taken from the settlements near the turn. Eleven hundred and forty Negroes were to build abatis of wood and shoulders below the forts in case of attack. Kerlerec advised Belle-Isle that the "grand batteries of the forts at the Turn and the two forward batteries on each bank of the river are in perfect condition" (Shenkle et al. 1978). The cannon were well mounted, and the necessary munitions were present. Since the apprentice cannoniers were not adequate to handle the number of cannon, Belle-Isle was to requisition needed cannoniers from the French troops, Swiss troops, or the Militia. A certain number of Negroes were also to be assigned to the artillery service. A quantity of steel nails had been made "in case we should have to withdraw into the two forts of Ste. Marie and St. Leon in order to surrender," and

M. de Belle-Isle knows too well the customs of war to make it necessary to explain to him that the

cannon of the forward batteries must be spiked only successively, the first in falling back on the second, and this one in being forced. There is no question of spiking the cannon that are in the said forts of Ste. Marie and St. Leon [Doc.23].

A roster of troops garrisoned at forts St. Mary (Ste. Marie) and St. Leon at English Turn for 1759 [Doc.24] shows LaVergne as captain at Fort St. Leon for all of 1759. Boulanger, an ensign, was there from January 1 to August 1, 1759; he had also been at the Turn in 1749. Mongin, an ensign, was there from September 1 to December 1, 1759. The usual garrison at this time with minor changes consisted of 2 sergeants, 3 corporals, 2 drummers, and 18 riflemen.

With the fall of Canada to the British in 1760 and the defeat in Europe, France was ready to negotiate. Possibly to keep Britain from gaining all her possessions in the New World, a secret meeting with Spain was held at Fontainebleau (Bouille 1965:27), and France ceded New Orleans and lands west of the Mississippi River to Spain. Later, in 1763, at the Treaty of Paris, England received Canada and everything France owned on the left (descending) bank of the river except the town of New Orleans and the island where it stood.

It was not until 1766 that the Spanish governor, Don Antonio Ulloa, arrived in Louisiana. He was intelligent and well-educated, but lacked troops and the confidence of the people of Louisiana. He spent most of his time at Fort San Carlos, a fort he planned and designed near the mouth of the Mississippi. Consequently, not being trusted by the Louisianans, coupled with resentment toward the Spanish government, he was driven out after a minor rebellion in 1768 (Moore 1976). At some time before he left, however, he gave Charles Aubry a verbal order to transfer "all the artillery from the forward batteries of the English Turn to New Orleans" [Doc.25].

Alejandro O'Reilly was appointed governor and arrived in New Orleans in 1769. He wrote to the French Commissioner Desclouseau on December 26, 1769,

Concerning the buildings at the English Turn. You know what bad conditions they are in and that M. Aubry is, like me, persuaded of the uselessness of that post, which was abandoned long ago. I would be delighted if you could gain some profit [for the French king] by the sale of the buildings

Lt. Ross, a British spy, made a trip on the Mississippi River in 1765. Since he spent 6 years putting together his information on a map (Figure 28), it is entirely possible his map could reflect information of a date later than 1765. The map records nineteen guns at Fort St. Leon and twenty-one guns at Fort St. Mary. By 1773, Thomas Hutchins, another British spy, reported the batteries in ruins. He wrote (Tregle 1967; 322)

At the English Turn were formerly two batteries, one on each side of the river, with a large stockaded fort in the rear of each of them. That on the east side mounted 10, and the one on the west side 12 thirty-two pounders. These batteries were made of earth 12 feet thick, faced with squared timbers... These batteries are in ruins, and their cannon sent to Old France.

Hutchins felt strong fortifications at this position would be practically impossible.

Captain Philip Pittman (1906:39) writing in the late 1760s, noted the English Turn formed almost a circle and that ships had to wait there for a favorable wind.

This gave the idea to the French of building 2 forts at this Pass, one on each side of the river, to prevent the enterprizes [sic] of any enemies; for although the forts are only enclosures of stockades and a defense against small arms, the batteries, on each side, which are of 10 twelve-pounders, are more than sufficient to stop the progress of any vessel...the forts are on points of land, which are bounded by the river on one side and by swamps on the other...

Pittman (1906:35) also mentions that the river water, although muddy "is wholesome and well tasted," that the people of New Orleans used no other water than settled river water, and that they suffered no ill effects from it.

Francisco Bouligny writing in 1776 (Din 1977:86) concerning a "Plan of Fortifications Essential to Louisiana for its Defense and Safekeeping" stated the following:

About four leagues before reaching the city, the Mississippi makes a bend which obliges all ships going upriver to stop because, in order to pass

the bend, it is necessary that the wind turn around. This place is called the English Turn and the French had two batteries established there. It would be desirable to re-establish [the batteries], making them stronger and defending them from behind. Although the land on both sides [of the river] here belongs to us, the English could come by way of Lake Pontchartrain and by entering the various bayous or swamps, attack one of these batteries by land. For this reason, it is necessary to guard [the batteries from behind] in order to have greater security.

All these batteries should be built with the greatest care and in places where the land is not exposed to undermining by the river, an inconvenience which can be avoided by searching for places where the river forms a beach."

At a Council of War in 1779, the next governor, Bernardo de Galvez mentioned English Turn, Manchac, Chef Menteur and Bayou St. John as points necessary for defense in the war with England, but no mention was made of actual fortification at English Turn. In 1793 and 1794, the next governor, Baron de Carondelet, activated a defense program. In his military report of November 24, 1794, he discussed English Turn at length (Robertson 1911:325). However, in the list of expenditures and renovations of fortifications, it is not mentioned [Doc.27].

In Carondelet's enthusiasm for English Turn he wrote, "The importance of this position had caused the French to fortify it with a line which ran from the river to the cypress swamp along both sides..." He further noted, "of all those works and their buildings, only useless traces remain." (Robertson 1911 vol.1:326-327).

The Turn was still being considered in 1801 when Davigny [Doc.28] wrote that the Balize should be fortified, and if that did not suffice, the Detour des Anglais, situated 14 miles below New Orleans offered another point of "impregnable resistance, which the French fortified, but which Spain neglected, believing the one at Plaquemines to be sufficient."

American Period

Louisiana was retroceded to France in 1800 and the official transfer of the colony from Spain to France took

place on November 30, 1803. On December 20, 1803, the colony was transferred to the United States, a result of the Louisiana Purchase. The U.S. War Department immediately initiated a survey of defenses in Louisiana. William C. C. Claiborne, Louisiana's first U.S. Governor, wrote in 1805 that the forts around New Orleans gave no security to the town, and suggested strong fortifications somewhere around English Turn (Rowland, n.d.).

By December 1807, a new fort was in the process of being erected at English Turn. At that time, engineer Captain William K. Armistead reported to the War Department about English Turn:

...a very commanding site, and one in every respect the most distinguished on the river as to eligibility for a Fortification, or Navy Yard; or both combined would be preferable as it has in front and its flanks a command of the river for more than two miles above or below; with this singular advantage; viz. that no vessel coming up the river is able to pass with the wind that brought her within cannon shot of the point - and the same impediment presents itself in descending - consequently, if this site was allotted by the government for a fortification and Navy Yard, it would possess this double advantage, your gun boats would be under the cover of the point, which the enemy could not pass with his force, together with the protection of the fort - under which circumstances the Navy would be free to act or retire at please (Buell, n.d.)

Armistead was transferred to the Atlantic states in April of 1808 and, 2 months later, he was replaced by William McRea who was instructed by the War Department to employ the best engineers he could find to follow the plan laid out and begun by Captain Armistead at Plaquemines Bend "and to erect a battery for eight to ten guns at English Turn, and a battery at Bayou St. John for four to six guns" (Buell, n.d.).

In May, 1809, Claiborne wrote to Major McRae:

I have received your letter of the 9th instant....As Director of the Fortifications erecting at the Bayou St. John, English Turn and Plaquemine, you have been subjected to much extra attention and fatigue, and in my opinion you are justly entitled to an extra allowance.... (Rowland n.d.)

Official records during 1809, state that the work at English Turn was nearing completion. The records also refer to the fort as "a battery of masonry," and note that it was intended to have nine guns, a magazine, and barracks for one company (Shenkel et al. 1978:42). On October 18, 1809, Major McRea, Director of Fortifications, transmitted a "Plan of the Fort at the English Turn" (Figure 7). It shows a battery of three angles for cannon, facing the river and behind the levee, with two full bastions at the rear. The salient point of each bastion is fitted for a cannon. Seven buildings are located within the fort.

Three years later, on August 20 and 21, 1812, a hurricane, which severely damaged the fort, swept across south Louisiana spreading devastation from Balize to north of Baton Rouge. Repairs were made on damaged military installations with Barthelemy Lafon in charge, and by March 1813, the hurricane damage at forts St. Philip, St. John, and at English Turn had been repaired.

During the year 1812, President James Madison ordered Brigadier General James Wilkinson to proceed to New Orleans and take command of the troops and stations within the Territories of Orleans and Mississippi. Wilkinson arrived near New Orleans on July 9, 1812, and immediately began investigating the defense facilities of the district. He repaired old Fort St. Charles in New Orleans and ordered army officers to survey all passes and bayous between the City and Lake Borgne and Barataria Bay (Casey 1974:99-104).

In December, 1812, Gen. Wilkinson ordered the Second and Third Regiments of Infantry to march to New Orleans. He wrote that "one or both of these corps will take post at the English Turn, where I have determined to finish the fortifications on which 30 or 40 thousand dollars were expended several years since" (Casey 1974:99-104).

At the beginning of May, 1813, Lafon drew plans for a projected fort as well as a "Statement of the Works" (Figure 8). Legend on the plan indicates the new construction was composed of earth faced with fascines. It seems to be half-completed, but the projected design for the fort shows that the fort was intended to have three bastions, a kind of demibastion incorporating the old battery, a moat, and an outer wall. Nine buildings were to be located within the fort: two officers quarters, two barracks, a kitchen, a commanding officers' quarters, a guard house, magazine, powder house, and officers' guard house (Casey 1974:99-104).

Lafon's projected fort was probably not completed because in May, 1813, Wilkinson carried out a War Department order to suspend all defensive work in the New Orleans area, to dissolve contracts, and to discharge workmen, since funds were short and emphasis was now on the northern front.

By November 1814, it was becoming increasingly clear to Louisianans that an enemy attack was near. Gov. Claiborne wrote to Andrew Jackson that his Tennessean forces could not "arrive too soon." The militia from Baton Rouge were posted at English Turn, where Colonel McRae was thinking of "throwing up a field work behind which the militia and other troops, in the event of an attack may fight with more confidence." "Colonel McRae," Claiborne wrote, "had also previously determined to complete the Fort at English Turn..." (Casey 1974:99-104).

Soon after the militia of Louisiana had taken a post at English Turn, Claiborne did, indeed, direct that a breastwork with a wide and deep ditch be thrown up from the front of the fort to the cypress swamp.

General Andrew Jackson arrived in New Orleans on December 2, 1814, and immediately made a personal inspection of the outlying forts (Casey 1974:77). He visited Fort St. Leon, stopping about 5 minutes, according to a letter written by Sergeant Rees who was quartered there [Doc.29]. Jackson promised to supply the fort with guns.

According to Rees, about 300 men from the fort took part in the first land action of the Battle of New Orleans on the night of December 23, 1814. They were marched upriver to the Chalmette Battlefield, stood there for about 2 hours and retreated to their barracks. During the day of the battle, a company of free men of color was recruited at Fort St. Leon under the command of a Negro officer, Captain Charles Forneret. It mustered about 31, but soon increased to 41. Many of these were from outside the city limits. The company was part of the Louisiana Militia under the command of General David Morgan, who commanded the west bank and the Terre Au Boeufs settlements near English Turn. On December 26, Morgan was ordered to take a position on the west bank opposite Jackson's line at Chalmette. The action on the west bank well above English Turn occurred during the main British thrust when American forces retreated in the only land defeat suffered by Americans in the defense of New Orleans. The retreat did not include Forneret's company.

Immediately following their defeat on the Chalmette Battlefield, the British opened another attack at Fort St.

Phillip at Plaquemines Bend, downriver from Fort St. Leon, on January 9. This attack, although repulsed after 10 days, alarmed the command into frantic preparations at Fort St. Leon. If Fort St. Phillip fell to the British ships, only Fort St. Leon would stand between them and the city of New Orleans (McConnell 1968:8).

With the threat of enemy ships ascending the river, Forneret's company and other troops stationed there began to restore the defenses of Fort St. Leon with great urgency (McConnell 1968:88-89).

The work of preparing Fort St. Leon was frustrating and demoralizing to Forneret and his free men of color. Up until December 26, they had been feverishly preparing the fort for action, but on that day they were ordered to stop and prepare it for abandonment. When General Morgan was ordered on that day to form a defense line on the west bank opposite Jackson's forces, the order included abandonment of Fort St. Leon, except for a small force and the removal of all large armament. Those pieces that could not be transferred were ordered to be sunk in the river, to be retrieved when necessary (ibid.).

Captain James H. Gordon, with rank of brigadier major, was assigned command of Fort St. Leon on January 4, 1815, and ordered to complete its defenses. By the eleventh, he had mounted two cannon on the left near the levee and had erected a hot shot furnace; at the same time, he asked Jackson for artillery pieces and experienced artillerymen. With hard work on the part of the garrison, Fort St. Leon began to assume defense status. By January 18, with additional supplies and a total of 235 men, the fort was defensible (ibid.).

Following the Battle of New Orleans, urgent attention was given to the status of the defense of the Mississippi Delta. During 1816, an eminent French General, Brig. Gen. (U.S.) Simon Bernard was hired to survey the coast of the United States and to plan a new coastal defense system.

Bernard decided that Fort St. Leon should be kept only until Plaquemines Bend downriver could be fully fortified. He reported:

At English Turn and at the left side of the river is Fort St. Leon, the west part of it, was in the "principe" a single battery, to which during the last war a bastioned delineation was added. The inspection of the plans and profiles shows that

this rampart can not bear cannon and that the gorge at the bastions is too narrow to render these batteries of any service, however it was a good temporary work, which must be kept as it is till the fort Plaquemine be conveniently fortified. (Bernard 1817:67; Quoted in Shenkel, et al. 1977:58)

In 1818, the chief of the Corps of Engineers sent a report to the Secretary of War on United States fortifications. Sixty existing works were listed, four of them in Louisiana. New works were planned for five sites in Louisiana, but English Turn was not mentioned in the report (Buell, n.d.).

While Fort St. Leon itself may not have been utilized during the Civil War, a new fortification, probably an earthwork erected by the Confederates, was constructed just downriver from the old work. An 1863 map (Figure 14) shows "old Fort St. Leon" at the center of the curve of the bend, and another fort at the lower end of the bend just below Cutoff Road. This fortification, however, does not seem to have played a part in military action. A plan for a proposed new fort at English Turn as drawn in 1874, but this apparently was not built.

Non-Military

The earliest concession to occupy the area where the fort was constructed was apparently that of Sieur Claude Trepagnier shown on a map drawn about 1723 (Figure 4). Claude Trepagnier, his wife and one child are listed on the Louisiana census of August 1, 1706 (Beer 1911:82). The buildings of the concession of Sieur Jean Baptiste Prevost, Agent of the Indies in Louisiana, are clearly shown on the 1749 drawing of the fort by DeBatz (Figure 3 with the legend translated in Figure 3a). Prevost's concession was 76 arpents (14,576 feet, ca. 2 3/4 miles) fronting the river and had a depth of 40 arpents (7,672 feet), according to early property descriptions. A careful study of ownership maps of 1853, and comparison with the U.S. Geological Survey (USGS) quadrangle maps (see Appendix C), indicate that the Prevost concession began at the west line of Section 4, T14S, R25E, which is the Orleans-Plaquemines Parish Line, and continued downriver to near the line between Sections 6 and 7.

In the fall of 1748, Prevost asked for indemnity of 5,150 pounds "because of the work done at the English Turn"

[Doc.30]. Maurepas wrote back that in the concessions of land in the colonies

...the king reserves the right to repossess at any time those portions [of land] judged necessary for building fortifications, without being responsible for paying the full value; and if that reservation was not included in the deeds [titres] of the concession it is nonetheless understood as the law [Doc.30].

The request was to be cut by 3,125 pounds "which covers the value of the provisions he has lost, the fences that have been destroyed, the loss of his pirogue, and the rent of his house for the time that it was occupied by the officers employed in building the fortifications" [Doc.30]. Prevost was paid 2,025 pounds on September 26, 1750 [Doc.31].

The labeling of the plantation in Figures 3 and 3a indicates "1, Cabane du Commandeur" near the gate and road to New Orleans, and which is about 615 feet by road to the "town gate" on the eastern side of the fort. The main house is labeled "a, Maison ou Corps de Logis," (the house where the Corps is quartered). The Prevost plantation was, indeed, involved with the building of the fort. The fence or walls of the grounds were about 200 feet from the fort.

Prevost died in 1769 and left a large estate to his nephews Salomon and Francisco Prevost. The plantation at English Turn was inventoried on July 24, 1769 as follows:

BUILDINGS:

Item A house forty feet in length by thirty feet in width, containing five apartments, level with the ground, glass windows and doors with many panes missing, gallery on front of said house, bricked between posts, covered with staves, the whole in very bad condition, here as MEMORANDUM.

Item A small room serving as a dairy, another, the same, for the goat, the whole forming a building forty feet in length by twenty-five feet in width, built on the ground and bricked between upright joists, covered with staves, here solely as MEMORANDUM.

Item A building twenty feet in length by ten feet in width, surrounded by pickets and covered with

staves, here as MEMORANDUM.

Item Two poultry houses of eighteen feet, surrounded by pickets in the ground, covered with staves.

Item A shed thirty feet in length by twenty-five in width, built of posts in the ground with a penthouse on each side, covered with staves.

Item A warehouse twenty-five feet in length by twenty in width, on the ground, surrounded by boards, covered with shingles.

Item A mill on posts in a shed of thirty feet square, posts in the ground, covered with stakes and in ruins.

Item A large warehouse forty feet long x twenty feet in width, on the ground, surrounded by boards, covered with shingles, much damage."

The contents of some of the other buildings were as follows:

Item A leather dresser's tool, a stone cutter, a paper mill, a copper pan, two large pots weighing twelve pounds, two tart pans, ditto; thirty-five pounds of old copper, a saw with its frame, five gutter-stones for a pump, with an iron bar of eight feet, a turnspit, five rods, five worn tub-bills, a chain for a truck, a large weeding-hoe (sarcloir), and three hundred pounds of iron; appraised at three hundred livres, here

Item In the sugar house was found four iron hooped tubs, four iron kettles mounted on their brick furnaces; appraised as five hundred livres, here

Item In the kitchen a pair of andirons and tongs, three iron kettles, a copper stew pan, a spit; appraised at thirty livres, here

Item In the dairy five milk tureens, a bucket, two pails, a churn, a large glazed pot; appraised the whole at forty livres, here

Item Three negro cabins.

Item Two gardens of two arpents each, with fruit trees, fenced in with standing pickets, in very bad condition.

Item Twenty-five arpents of wax-myrtles, (candleberry trees).

Item The yard inclosures of standing pickets, falling into ruin; a fence separating the pastures of the cattle and the desert, made of crosswise depth."

The contents of the house were as follows:

First In the parlor was found a pair of andirons and tongs, a pier mirror of two mirrors, nine straw chairs, a small tapestry sofa, a footstool of the same, an old card table covered with cloth, with its cover of broadcloth, a pewter pot, five rods, and an old tapestry of painted linen; appraised the whole together at one hundred and ninety livres, here

Item In a room was found a cypress armoire, painted in speckled grey, eight shirts three-fourths worn out, twenty-seven napkins, three table-cloths, six pairs of drawers, three wasitcoats, a vest, a large pair of breeches, two pairs of pillow-slips, two pairs of white leggins and one pair in cloth, a calico counterpane very much worn, a sand roll and a rod; appraised the whole together at one hundred livres, here

Item In another room was found in the fireplace a pair of andirons, shovel, tongs, a broken pier glass, a pair of chimney scones (bracket chandliers); appraised at forty livres, here

Item A walnut bedstead, a hair spring mattress, covered with ticking, a feather bed and its bolster, covered with ticking, a wool mattress covered with cottonade, tester and valance of damaged calico, with green serge curtains, a white woolen blanket; appraised the whole at three hundred livres, here

Item A walnut chest of drawers with three drawers ornamented, three rods; appraised at sixty livres, here

Item Near the stairway going up to loft was found a walnut cupboard, with doors at top and bottom, with its hinges, a pair of small brass candlesticks, three crystal salt-cellars; appraised the whole at one hundred and forty livres, here

Item In the loft was found a large cypress chest, painted red, with sixteen earthenware dishes; appraised at twenty-five livres, here

Item On the gallery, a dining table, two iron hooped tubs and three jars; appraised at ninety-five livres, here

Item In a storeroom was found six double bolts for an armoire, twenty-five cross bars for windows with bolts and hinges, eight large bolts with springs, six large frame saws, forty-six saw blades, six pit-saws, ten fixtures, and hooks for glass doors, a shoulder of mutton; appraised the whole together six hundred livres here....
(Louisiana Hist. Quart. 1926:412-457, 495).

It is interesting to note that nowhere in the inventory of Jean-Baptiste's succession is there any mention of the 1749 fort, which by then was only twenty years old.

In twenty years, however, changes had taken place. Apparently indigo was no longer being cultivated (a place for drying indigo was noted on the 1749 plan), but sugar cane was being grown, it having been introduced into Louisiana in 1751 (Gayarre 1852 vol.2:63). There were at least six Negro cabins in 1749, whereas in 1769 there were only three. The plantation had evidently deteriorated. One gets the feeling from the inventory that the place may have been abandoned for sometime, even though a shoulder of mutton was in the storehouse.

Salomon Prevost, as administrator, sold off small parcels of the estate through the Spanish Period and into the American Period. In 1812, however, Salomon still owned 46 arpents and 10 toises (8886.8 feet) fronting the river "at a place situated at QUARTIER DU DETOUR DES ANGLAIS" (Maduell 1975:53).

These small landowners were primarily free persons of color, that is, non-whites of pure or mixed parentage having free status with personal and property rights guaranteed by law. Four small tracts lay in close proximity to the site

of Fort St. Leon. They include the Juan Pueche habitation, the Joseph Dupard habitation, the Constance Larche tract, and the Rosette Toutan tract, later known as the Villere Place. The first two above-mentioned became part of Fort St. Leon Plantation when it came into being in the late 1820s.

Juan Pueche Habitation. The uppermost of the four small tracts was the Juan Pueche habitation. It was 8 arpents (1534.4 feet) wide by 40 arpents deep and began 11 arpents upriver from Fort St. Leon. Juan Pueche purchased the land from Salomon Prevost in two 4-arpent parcels during 1805 and 1806 (Pedesclaux 1805;1806). The property was described as lying "at Detour des Anglais", with a boundary running "38°N and 30°W." Pueche paid \$1,000.00 for each parcel, both of which were apparently unimproved land. He established a sugar plantation on the property, and held it about 15 years (Shenkel, et al. 1978:69).

On November 6, 1820, Pueche sold the plantation to Mrs. Augustin Mercier, wife of Joseph Bayle (Lafitte 1820). The property was added to other lands in a partnership that formed Fort St. Leon Plantation. Included in the transaction were 10 slaves, 18 cows, 6 "pairs" of oxen, 2 "ditto, younger", 12 other "horned cattle", 11 horses, 2 mares, 2 mules, a filly, 4 hand carts, and "a large assortment of instruments and agricultural implements of all kinds for different trades--that of farming, or carpentry, of framing, of milling, of masonry, forgery, and coppery" (Fr. doloire, cooper's adze). Also sold were "150 cords of firewood, 2000 stones, of which 1500 are worked into paving stones, 15 million [sic, thousand?] bricks, boats, 150 empty sugar bottles, and the standing crop" (Shenkel et al. 1978:69).

Joseph Dupard Habitation. Immediately downriver and adjacent to the Juan Pueche tract was the habitation of Joseph Dupard. Dupard was a free mulatto, illiterate farmer whose land was at the site of Fort St. Leon. He was born in New Orleans, the "natural" son of a prominent and wealthy Spaniard, Pedro Delille Dupard. In June of 1797, Joseph Dupard married Maria Sauve, a free mulatress from St. Augustine, Florida. They established a sugar plantation and constructed buildings on the property (Shenkle et al. 1978).

Dupard purchased the land from Salomon Prevost on December 5, 1805 (Pedesclaux 1805). It was 11 arpents (2,112 feet) wide and described as being at "Detour des

Anglais" and "according to a plan of (Barthelemy) Lafon" dated April 6, 1805 which was given "to the buyer" at the time of the purchase.

Dupard's 11-arpent swath of land happened to be the location chosen by the United States Government for the erection of the second English Turn fort of 1809. It was located precisely in the inner portion of the river bend, but there is no documentary evidence to show that it contained the ruins of the original fort of 1749. Although the second fort was built in 1809, while Dupard owned the land, no act of sale to the government has been located during this period (Shenkel et al. 1978:70). Not until the 1809 fort was being rebuilt after damage by the hurricane, in 1812, did the United States purchase 2 arpents width by 2 deep from Dupard in January, 1813 (Pedesclaux 1813).

Dupard was paid \$2,000 for the small parcel, which was taken from the downriver side of his habitation. After this sale, Dupard's property title was continuously described in notarial acts as having a width of eleven arpents, as it always did, but some of the depth was represented as being only 38 arpents because two "faced the fort" and the other nine "faced the river" and had the full depth of 40 arpents (Shenkle et al. 1978).

During the year 1813, construction was proceeding on the English Turn fort and its works. Barthelemy Lafon's "Plan of English Turn" (Figure 9) was executed exactly 4 months after Dupard sold the government its 2-arpent block. The plan indicates the houses situated on Dupard's property. They consisted of a principal dwelling and three outbuildings.

Apparently, the soliders and their constructions caused Dupard some losses, and he complained to Governor Claiborne, who sent him to General Flournoy with a letter on November 6, 1813:

The bearer, Joseph Dupard, a free man of color residing near the English Turn, waits upon you for the purpose of complaining of certain depredations committed on his property by the soliders stationed at the English Turn and of his fears of further outrage unless you would be pleased to extend your authority in his behalf.... (Rowland n.d.)

The soldiers' depredations were not, however, enough to keep Joseph Dupard from joining the Louisiana Militia in General de Clouet's regiment, which was stationed at English

Turn (Shenkel et al. 1978:72).

Fort St. Leon Plantation. The Pueche and Dupard properties formed the nucleus of Fort St. Leon Plantation. Louis Christian Miltenberger, a New Orleans physician, and his sister-in-law, Mrs. Augustin Mercier, wife of Joseph Bayle, formed a partnership to acquire and operate the plantation. In 1820, Mrs. Bayle made the first acquisition by the purchase of the Juan Pueche tract for the substantial sum of \$21,000 (Shenkle et al. 1978).

The following year, Dr. Miltenberger enlarged the tract by purchasing 3 adjacent arpents from Joseph Dupard (Lafitte 1821) from the upper limit of Dupard's habitation.

One year later, Dr. Miltenberger and Mrs. Bayle made a formal act of partnership before notary Marc Lafitte, in New Orleans, on December 9, 1822. They declared that they co-owned the land previously accumulated, along with all "utensils of agriculture, ten plough horses, two plough mules, a mare and her foal, 58-60 horned cattle, of which nine are oxen, six are young oxen ready for the yoke, 18 are milk cows, and the rest all young cattle" (Lafitte 1822). There were also carts, carriages, agricultural implements, and 20 slaves. The partners agreed that Mrs. Bayle was to operate the plantation, and she and her husband were to live there. The plantation at that time contained 11 arpents: 8 from the Juan Pueche habitation, and 3 from Dupard (Shenkle et al. 1978).

In 1826, an opportunity to enlarge Fort St. Leon Plantation arose again when Joseph Dupard, heavily in debt, agreed to sell the remainder of his habitation to Dr. Miltenberger and Mrs. Bayle. Dupard's remaining tract consisted of 8 arpents, "of which six face the river and have a depth of 40 arpents, and two face the fort and have a depth of only 38 arpents." Dupard's house and dependencies were located on this land. The price was \$4,500 (Shenkle et al. 1978).

In 1827, Mrs. Bayle sold out her interest in the partnership to Dr. Miltenberger, and he sold the entire plantation to the Villere family. Felix and Anatole Villere were two of the sons of the first Creole Governor of Louisiana, Jacques Philippe Villere and his wife Jeanne Henriette Fazende. A Villere daughter, Eulalie Leocadie, married her cousin Gabriel Cyrille Fazende, and the two brothers joined their brother-in-law Fazende in the purchase of Fort St. Leon Plantation from Dr. Miltenberger for \$31,000 (Shenkle et al. 1978).

The property was described as being 5 leagues below New Orleans. It consisted of 19 arpents (11 from Dupard and 8 from Pueche) "of which 17 face the river and have a depth of 40 arpents, and two face the Fort and have a depth of only 38 arpents." (de Armas 1827). This citation is the last known to relate that Fort St. Leon still belonged to the United States Government. No act of sale has been found to indicate that the fort and the ground on which it stood were sold to Fort St. Leon Plantation property owners. By 1877, the Fort's 2 arpents nevertheless were included in the property title of Fort St. Leon Plantation.

Included in the sale to the Villeres were 22 slaves, 16 horses or mules, 8 "beefs," 6 bulls, 15-16 cows, of which 9 were with calf; 2 pigenniers (pigeon houses) with pigeons, a large pirogue, carriages, carts, pickaxes, plows, sugar kettles, all utensils of agriculture, 14 arpents of cane, of which some were ribbon cane and some "creole cane" (Shenkle et al. 1978).

In 1830, Felix and Anatole Villere purchased the interests of their six brothers and sisters in a portion of Magnolia Point Plantation and joined it to Fort St. Leon Plantation. They thus added 6 arpents, 24 toises to the 19 arpents already constituting Fort St. Leon, bringing its extent to 25 arpents, 24 toises. Felix and Anatole Villere then sold their brother-in-law Gabrielle Fazende 1/3 interest in the 6-arpent 24 toise portion so that the three partners owned the entire plantation jointly. After Fazende died, his widow sold her interest in the plantation to Felix Villere and Hughes Villere (Ducatel 1851). By mid 1851, Fort St. Leon Plantation was owned jointly by Felix and Hughes Villere.

Felix and Hughes Villere died within a year of each other, and in 1876 and 1877 their estates were sold at auction, including Fort St. Leon Plantation, which had been in the family for 50 years. This auction sale was advertised in the New Orleans Republican of September and October 1877. The description of the property cited a mansion house, outbuildings, stables, outhouses, sugarhouse, mules, carts, agricultural implements, and 1,037 arpents (square measure) of ground, "including the ground on which stands the said Fort St. Leon." It is thus clear that by this time title to the 2 arpents of ground formerly owned by the U.S. Government had reverted to the adjacent property owner. No act of sale, however, has been found to specify a formal transaction in this matter.

The buyer at the 1877 auction was Polycarpe Fortier.

He lived only one year after that, and the property was again auctioned for his estate in 1878. The sale was advertised in the Picayune in March, April, and May of 1878. It was described as

Fort St. Leon Plantation, formerly Felix Villere's Plantation; a splendid sugar estate, 14 miles below New Orleans; the improvements consist partly of a sugar house, mill, and machinery, a dwelling and outhouses, barn, and laborer's quarters, 21 mules, carts, and agricultural implements. 150 arpents of cane have been planted this year and about 50 arpents of first year's rattoons; 20 arpents in corn...The land is nearly all arable... unsurpassed...for the culture of either sugar or rice; comparative safety from overflows or early frosts, easy distance from the city (Soniat 1878).

Through a series of transactions, Arthur Brulard became one-half owner of the plantation in 1879, and in 1893 Mrs. Brulard obtained the other half interest. She retained the plantation and was one of its principal owners and residents for 26 years. Several maps of the periods cite this name in residence (Figure 17).

In 1905, Mrs. Brulard sold to Milton P. Dollut, who immediately resold to Talein Joseph Dauterive. The Dauterive family remained at that place until 1923. An act of sale of cypress from Fort St. Leon Plantation was made by T. J. Dauterive in 1905, specifying that the buyer would have a 20-year lease to cut timber "from the beginning of the swamp to the rear line of the plantation." He also gained the right to "store timber and ties along ditches and on the batture and build camps for the laborers within 200 yards of the lower line of the plantation (the line at the fort)" (Denechaud 1905).

In 1910, T. J. Dauterive died and his estate was inventoried by the Plaquemines Parish Clerk of Court (Shenkel et al. 1978). Dauterive's children were Louis, Bernard V., Gaston, Namoie D. Doullut [sic], and Ada Dauterive Denley. The plantation lands were valued at \$5,000. Louis D. Dauterive claimed as his separate property a "four-room house next to the main house, 300' long, with 500 orange trees around the residence." Bernard Villiere [sic] Dauterive claimed a five-room house on the lower line of the plantation with 50 orange trees. The movables consisted of "12 mules, horse, cane carts, stable cart, cane loading machine, hay, rake, plows, magnolia cultivators, a lot of junk, furniture, and groceries in the commissary."

There were 90 acres of cane and 900 tons of cane (Shenkle et al. 1978). In 1923, Mrs. Orelie Perez, widow of T.J. Dauterive sold the plantation to John J. Flanagan for \$20,000.

Constance Larche Habitation. Immediately downriver from the line where Fort St. Leon stands, which was the lower limit of Dupard's habitation (later the lower limit of Fort St. Leon Plantation), began a small tract of land known as the Constance Larche Habitation. It was 8 arpents wide by 40 arpents deep. It was described as being "five leagues below New Orleans, in the former District of St. Leon" in many notarial acts (Shenkle et al. 1978).

It was sold by Salomon Prevost in 1775 to a free man of color, "Bautista Haury" in Spanish documents, but more freely rendered in French as "Jean-Baptiste Aury." Aury paid 500 livres for the land in 1775, through a private act of sale. The sale was later deposited in the notarial records of Fernando Rodriguez (1787).

Aury left the property to his daughter, Angelique Aury, an educated femme de couleur libre. Angelique retained the land until 1822 and then sold it to Constance Larche, free woman of color, for \$5,000. It was described in the act of sale as "a land at English Turn, in the former district of St. Leon, at five leagues from New Orleans, all according to a plan of B. Lafon made March 5, 1805" (Pollock 1822). Angelique did not occupy the habitation at English Turn, but was a resident of New Orleans. She stated that she had "owned the land more than thirty years without challenge" (Pollock 1822).

This tract remained in the ownership of Constance Larche for almost 50 years, and upon her death, she left it to her six children. These heirs sold the land on March 9, 1870 to William Stackhouse, a Plaquemines plantation owner who after the Civil War operated numerous plantations in the area with his brother, but subsequently went bankrupt. A sketch taken from the Lafon plan of 1805 (Figure 29) was included in this act of sale (Doriocourt 1870). Not included in the sale were the crop on the land on 2 arpents which adjoin the Villere Plantation (downriver) and some fruit trees "belonging to vendors who reserve the right of retaining said fruit before the time fixed for the delivery of said two arpents, that is, before December 1, 1870." The fruits in question were probably oranges (Shenkle et al. 1978).

Stackhouse lost the property through a sheriff's sale

to his creditor, James E. Zunts, on February 7, 1874. In 1890, Zunt's heirs sold this and other nearby plantations to Joseph Purl Kearney. The sale included 80 mules, 25 wagons and carts, a lot of farming implements, and buildings; it did not include the sugar, coal, cut ties, horses, buggies, or carriages (Ward 1891). In 1939, the large property was purchased by Samuel Zemurray and subsequently became the property of the Federal Government (Bass 1939).

Rosette Toutan Tract. The Rosette Toutan Tract is a small 5-arpent tract that was later called Villere Place. It adjoins the Larche Tract downriver. It was sold in 1805 by a Lower Coast resident to Charles Dupard, a free man of color, for \$600. Charles Dupard sold it in 1810 to Firmin Perrault, free man of color (Pedesclaux 1810). It was continuously described as being 5 leagues from the city.

In 1831, Perrault sold the property to his mother-in-law, Rosette Toutan, "alias Brou," femme de couleur libre, for \$600 before Lt. Caire (1831). Rosette Toutan was the illegitimate daughter of Toutan Beauregard, a St. Bernard Parish planter and father of General P.G.T. Beauregard, making her the half-sister of this Confederate hero. Her mother was Marianne Duverges, free woman of color. Rosette died on July 1, 1843, and her estate was sold by the heirs at auction on April 7, 1847, to Felix Villere, for \$5,405 (Shenkle et al. 1978).

Felix Villere, was a co-owner of Fort St. Leon Plantation nearby. The Toutan Habitation was renamed "The Villere Place", but is not to be confused with Magnolia Point Plantation (at Twelve Mile Point), which was owned by Felix Villere's brothers. "The Villere Place" was legally described as being "15 miles below the Town of Algiers (by river) and between eight and nine miles by the Cut-off Road which passes through the land" (Shenkle et al. 1978).

Cutoff Road was literally that. It was a short overland (swamp) route between Cutoff, opposite Chalmette, and the Fort St. Leon area, cutting off the whole of Twelve Mile Point. The map (Figure 14), "Military Approaches to New Orleans, Major D.C. Houston 1863," indicates a Confederate emplacement immediately downstream from Cutoff Road. That emplacement was probably located on this particular tract. Cutoff Road and the location of the ruins of Fort St. Leon along with details of the several properties including a major property line along the downstream edge of the fort (which would be the Dupard/Larche property line), are shown on the Mississippi River Commission Map of 1884 (Figure 16) and U.S. Coast and

Geodetic Survey Map 1895 (Figure 17).

The Villere Place consisted of 378 acres, and was retained by the Villere family until 1869. At that time it was auctioned to William and Haywood Stackhouse (Ducatel 1869) and was described as follows:

There are about 50 arpents cleared and about 10 arpents of first year's rattoons. The fence and ditches are good and the prairie land is good pasture. The improvements are a one-story house, with two rooms, a kitchen, stabling, and hay house. On the front is a one-story house leased as a grocery store until November 1869 at \$16.00/mo.

The tract eventually became the property of James E. Zunts.

Kearney, who with others had bought the Larche tract from Zunts, went into partnership with Richard Milliken in 1896 and, after Milliken's death, with his wife. They combined the Larche tract with that of Rosette Toutan and Belle Chasse Plantations, calling the entire package Belle Chasse. It also included St. Anne Plantation, adjacent downriver to Belle Chasse. This package of four tracts of land was purchased intact in 1906 by Theodore S. Wilkinson (Peters 1906), and the following year he sold to a land company known as the Lower Coast Developing Company. The Lower Coast Developing Company gave way to the Belle Chasse Land Company that same year (1910), and in 1912 it was purchased by the Hero Company. Many lots were subdivided from the tracts during this period. The Hero Company made a number of sales before they finally sold out in 1927 to Allen S. Hackett. A 120-foot-wide strip was dedicated for a public road with spaces for ditches to drain it in the act of purchase by the Hero Company (A. Hero, Jr., Notary Public, 8/7/1912).

In 1939, the large property was purchased by Samuel Zemurray and subsequently became the property of the Federal government (C. Bass, Jr., Notary Public, 6/22/1939).

Recapitulation and Chronology

Date	Event
1699	English ship turned back by Bienville
1722	Bienville may have established batteries and warehouse at English Turn
1723	Concession of Claude Trepagnier at English Turn Bend
?	Jean Baptiste Prevost Concession, 76 arpents fronting the river, 40 arpents deep
1743	Pierre de Rignaud de Vaudreuil appointed governor to replace Bienville
1746	Construction begun on English Turn forts
1747	Bernard Deverges drew plans for 2 forts at English Turn
1748	Repair of great batteries from damage of strong winds; Prevost requested indemnity for damages for work done at the fort
1749 April 12	DeBatz drawing "on the spot" of the Northern Fort at English Turn and the habitation of Jean Prevost; the upriver side of the great battery was unfinished; the garrison may have left before the end of the year
1750	Prevost paid
1750, Jan. 27	Not garrisoned
1752, Spring	Not garrisoned
1752, Fall	4 companies, 200 men stationed at both forts
1753	Vaudreuil replaced as governor by Chevalier Kerlerec
	Threat of war with Great Britian
	Tour of inspection by Vaudreuil, Kerlerec and others reported forces and fortifications in

- good shape; artillery was defective and in small quantity
- 1756 British captured French Fort Duquesne during French and Indian War
- 1757 Known as Fort St. Leon
- 1759 The grand batteries and 2 forward batteries at forts St. Leon and St. Mary reported in perfect condition
- 1760 France ceded New Orleans and possessions west of the Mississippi River to Spain at the Treaty of Fountainbleau
- 1763 England received Canada and French lands east of the Mississippi River at the Treaty of Paris
- 1765 Lt. Ross reported 19 guns at Fort St. Leon, 21 guns at Fort St. Mary
- 1766 Spanish governor Ulloa arrived in Louisiana
- 1767-1768? Ulloa ordered artillery of the forward batteries and epaulements (shoulders) to be transferred to New Orleans
- 1768 Ulloa left Louisiana after a minor rebellion
- 1769 Spanish governor O'Reilly arrived in Louisiana
- English Turn buildings were in bad condition and "were abandoned long ago"; buildings may have been sold
- Jean Baptist Prevost died; Saloman Prevost, nephew, administrator of his estate
- 1773 Hutchins reported the batteries at English Turn were in ruins; the east had 10, the west 12, 32-pounders; the batteries were made of earth 12 feet thick and faced with squared timbers.
- 1792 Governor Baron de Carondelet thought the English Turn was an important position, but reported that the French fortifications that

ran from the river to the cypress swamp along both sides were in ruins with only useless traces remaining.

- 1803 The Louisiana Territory purchased by the United States
- 1805 Joseph Dupard purchased 11 arpents from Salomon Prevost, immediately downriver from Juan Pueche
- 1805-1806 Juan Pueche purchased 8 arpents, beginning 11 arpents upriver from Fort St. Leon
- 1807 Batteries at English Turn built
- 1809 Fort of English Turn almost completed as a battery of masonry
- 1812, Aug. Fort damaged by hurricane
- 1812, Dec. 1 Gen. Wilkinson ordered the Second or Third Regiment to English Turn; the fort was to be finished
- 1813, Jan. 1 American fort site purchased by the United States as 2 arpents wide by 2 arpents deep from Joseph Dupard
- 1813, May Lafon's drawing of the unfinished works and the projected fort
- May War Department ordered to suspend all fortifications in the New Orleans area
- Nov. Dupard requested help from Governor Claiborne in dealing with the soliders at the fort
- 1814, Nov. Militia from Baton Rouge posted at English Turn; Col. McRae determined to complete the fort;
- Breastworks with a wide deep ditch ordered to be thrown up from the front of the fort to the cypress swamp.
- 1814 A company of free men of color recruited under the command of Capt. Forneret; this was part of the Louisiana militia under Gen. David Morgan, commander of the west bank and

the Terre ou Boeufs settlements.

- 1815, Jan. 4 Captain James Gordon assigned to put Fort St. Leon in defense status
- Jan. 8 British attacked Fort St. Phillip at Plaquemines Bend
- Jan. 9 British continued attack on Fort St. Phillip at Plaquemines Bend
- Jan. 18 Fort St. Leon remained in defense status with 235 men, 2 cannon on the left near the levee, and a hot shot furnace
- 1816 Gen. Bernard's decision that Fort St. Leon be kept only until Plaquemines Bend downriver could be fully fortified
- 1818 A report on fortifications does not mention Fort St. Leon
- 1820 Pueche sold his 11 arpents to Mrs. Mercier, including 2000 stones (1500 worked into paving stones) and 15,000 bricks
- 1821 Joseph Dupard sold 3 arpents adjoining the Pueche tract to Mrs. Mercier (Bayle) et al., forming the Fort St. Leon plantation
- 1826 Dupard sold the remaining 8 arpents to the Fort St. Leon Plantation; 6 arpents faced the river with a depth of 40 arpents and 2 faced the fort with a depth of 38 arpents
- 1827 Fort St. Leon plantation sold to the Villere family
- 1877 The plantation sold at auction on the death of Felix and Hughes Villere; included the ground where Fort St. Leon stood
- 1879 Arthur Brulard became 1/2 owner of Fort St. Plantation
- 1893 Mrs. Brulard obtained the other 1/2 interest in the Plantation
- 1905 T.J. Dauterive became owner; he sold the right to cut cypress from the plantation for

20 years and the right to store timber and ties and build camps for laborers within 200 yards of the lower line of the Plantation

1923

Plantation sold

1939

Plantation became property of the Federal Government

THE MODELS

Method

The research design for testing at an area on the Mississippi River known as English Turn Bend, and specifically as Fort St. Leon, generated models and several hypotheses for testing (Gilmore 1981). Following is a description of the models. Hypotheses based on the models are stated at the conclusion of this section.

Models for a conception of what the forts and the area looked like during each occupation period, and the kinds of cultural remains that can be expected were formulated from details isolated from studies of all aspects of the site, principally the historical background and archeological sites of the same period. If the history of a site is not well known, then methods of building construction, as well as artifactual data, will have to be taken from archeological sites of the same time period. For this project, however, there are plans and some building specifications that can be used for expected architectural remains. Therefore, archeological sites of each time period have been used principally for expected portable artifactual remains. This is a very important aspect of models in multicomponent sites or sites whose cultural and/or political affinities need to be validated. It is especially important for this project, for there is the possibility the American fort was built atop the French fort; consequently, to demonstrate the presence of such occupation, the expected cultural remains should coincide with the findings in the field.

The first step was to compile as much information as possible about the project area. Some of this was accomplished by Shenkel, Swanson, and Evans (1978), but further details were needed, as well as clarification of others. For both French and Spanish periods, the information was somewhat sketchy and additional documentary research was done.

A collection of maps and aerial photographs of the English Turn area was made. Most of the maps were collected by Shenkel, Swanson, and Evans (1978). Additional aerial photographs and maps have been obtained during this phase of the project for a study of property lines, levees, sand borrowing, and stability of the mortared brick remains, as well as a general aerial imagery study. These studies are the subject of Appendix C.

Two sets of maps were used: (1) the plans of the forts, and (2) maps of the area for 1747, 1813, 1878, 1884, 1895, and aerial photographs for 1955, 1978, and 1970 (infrared). The maps, plans of the forts, and aerial photographs are listed in Tables 2 and 3. The plans of the forts (Figures 3, 7, 8, 10) were redrawn with proper compass directions to the same scale as the Map of Record, made of the site by Shenkel et al. (1977) and placed in several overlay positions on the Map of Record. The results are discussed under each model.

The second set of maps was also made to the same scale and overlaid on the 7.5' USGS Chalmette Quadrangle (1972) for (1) comparison of the position of the river bank; (2) to obtain a known position that could be measured on the ground to the point where the maps show the fort; (3) correspondence of points, especially the position of the fort, and the location of the French fort. The results are discussed under the models.

Colonial Period Model

Since it is probable that Fort St. Leon had no military use during the Spanish regime, the model for both French and Spanish occupation are combined under the Colonial Period. Overlays used for figures in this report are made on the Project Map.

Location

In an attempt to find the position of the French fort on the bend and to gain information about river erosion through time, the 1747 maps (Figures 1 and 2), Lafon's Plan of English Turn, 1813 (Figure 9), Mississippi River 1878 (Figure 15), Mississippi River 1884 (Figure 16), and Mississippi River 1895 (Figure 17) were drawn or photographed to the same scale and overlaid on the USGS Chalmette Quadrangle for 1972.*

Several interpretive problems concerning these maps must be taken into consideration. First is the accuracy of map-making techniques during these years. Compasses and methods for measuring long distances were frequently inaccurate, and the concept of the length of the arpent

*These were shown in Figures 18, 19, 20, 21, 22, and 23 in the Research Design (Gilmore 1981).

varied. Deverges, an engineer, who drew the plans used on Figures 18 and 19, was said to have known the river better than anyone at that time (see Historical Background); it would be expected, therefore, that he would have made a fairly accurate map of the river. Since, however, his drawing of the river varies from the present map, two possible positions were selected for the French fort (Figures 18 and 19). Secondly, a major problem in locating the position of the French fort on the bend is that there are no known specific reference points in common with the French period and the present.

A series of aerial photographs, 1955, 1965, 1970 (IR), 1975 (IR), and 1978 were obtained with the purpose (1) of locating disturbed areas that might relate to the French fort and (2) to compare shoreline configurations. No area could be discerned that could be said with assurance to be related to the French fort.

Since it is known the French fort was on the Prevost property and that his concession extended around English Turn Bend, the location of the fort may have been anywhere on the curve. Two points shown on most maps are Cutoff Road and the Fort St. Leon Plantation property line of the 1820s, which was also the Dupard property line. These are indicated on the USGS Chalmette Quadrangle (1972) by red-dashed section lines. The distance between these two lines is 3374.4 feet, which is the same measurement as a survey made in 1912 (Figure 23). In the plan of the French fort (Figure 3), a road extends northward about 1400 feet west of the Fort. This road, however, is shown as bearing about N 10°W, whereas Cutoff Road bears about N 60°W; it also curves toward the west, which was not true of Cutoff Road. The large meander of the river was being "cut off" by passengers alighting from vessels and continuing by land to New Orleans long before the fort was built. It is uncertain, however, whether the early and later roads were the same (Figure 6).

The cleared area of the Prevost Habitation as shown on the northeastern side of the fort (Figure 3) measures from the river bank northward about 1036.8 feet, whereas the cleared area of the Fort St. Leon Plantation as shown on the 1878, 1884, and 1895 maps is about 2000 feet. The configuration is similar and it is possible more land was cleared after 1749.

The French fort sits at an angle of N 18-19°W, and the American fort at N 19.5°W, each magnetic north and each sitting at approximately right angles to the shoreline. This may be a coincidence due to the curvature of the river

bank; on the other hand, this may indicate that the alignment and some features of the French fort were utilized in building the American fort, since the angles are nearly the same. Changes in declination, however, undoubtedly have taken place.

Although the large fort shown in Figure 1 was not built, part of the great battery was finished in 1747, with a different plan for the rest of the fort. The battery was still not completed in 1749 (Figure 3). The profile drawing (Figure 1) shows the battery to be about 9.3 feet above high water. It is not known if the battery was finished as planned. The completed part scales about 135 feet in a straight line across the battery. Interestingly, the riverside battery of the American fort scales about 186 feet.

There is, then, the possibility that remains of the French fort were incorporated into the American fort. It is questionable though how useful such remains would be after 40 years or more of abandonment. Furthermore, high water and floods certainly would be destructive to a structure made of earth, fascine, and clayonnage.

Overlaying the 1747 maps (Figures 1 and 2) on the USGS Chalmette Quadrangle (1972), the first position (Figure 18) places the French fort east (upriver) of the Dupard property line in about the position of the American fort. Erosion of the bank would have taken away part of the great battery and the barbette battery downstream near the position of a present day revetment. Assuming Deverges made an accurate rendition of the river, the overlay shows erosion has taken place near English Turn Light. Across the river, Shingle Point would have been eroded, as well as part of the great battery of Fort St. Mary with the load of the river being redeposited at the point bar below Shingle Point. The curvature in the river at Cutoff Road shows cutting of the bank since 1747 to be about 800 feet, whereas the second position (Figure 19) indicates about 400 feet of cutting. This position shows the great battery about 1400 feet upriver from the English Turn Light and partly inundated, with some part under the 1912-1913 levee as well as the modern levee. Saucier (Appendix B) has estimated 198 (60 m) to 248 (75 m) feet of bank recession since mid-18th Century. Using several maps of historical bankline positions and of the 1817 fort (Figure 13) this project has estimated a loss of about 100 feet at the mortared brick fragments in the river (Appendix C). The remaining overlay maps, showing the American Fort, (Figures 21, 22) seem to agree more with position 2 (Figure 19) as far as the river bank

configuration is concerned, making it possible that the French fort was somewhat to the west (downriver) of the American fort.

Assuming that part of the great battery is now inundated or eroded away, and placing the scale drawing of the French fort on the Map of Record, several positions can be used. The first position (Figure 25) assumes the American fort utilized part of the French fort. We know no masonry was used on the French fort, but it was used on the American fort; therefore, the masonry fragments are aligned with a section of the great battery along with a rise in the terrain. This indicates the fort extended northward of the present levee and may have been disturbed by the borrow pit and levee building of 1892. It is probably a coincidence that the western battery is aligned with remnants of the old levee on the western side.

In position 2 (Figure 26) the plan has been moved toward the east (upriver) and shows about the same features. It is self-evident that other positions are feasible. Assumptions could be made that part of the great battery was bricked by the Americans, and if the mortared fragments in the river are near or not far from their original position, then the French fort would extend farther north (landward); or if the great battery was bricked on the downriver side by the Americans, the fort would have been farther east (upriver) and north (landward). The fact that this area and one downstream near English Turn Light are the only two along this stretch of the batture with relief argues for the French fort to be in the area of the mortared brick or in the area downstream near the light.

Position 3 (Figure 27) is in the area near the light. Here the terrain has about the same elevation as the area upstream, not taking into account the elevation of the old levee. This position fits the terrain as well as the position upstream, and in addition, the alignment of the river on the plan of the fort is closer to the present alignment than to that upstream. It was also in this area that a sherd of "delftware" (Shenkel et al. 1977), an 18th century ware, was found. If this position is correct, then remains of the Prevost Plantation would be between this position and the American fort. Testing in this area, however, produced negative results.

Continuity in the name Fort St. Leon, however, is additional support for the French and American forts being at or near the same place. Kerlerec, the governor who succeeded Vaudreuil, wrote the Minister in 1757 concerning

Fort St. Leon by name. The 1813 map of the American fort by Lafon (Figure 9) labels it as St. Leon.

Physical Cultural Remains

Since it is possible the French fort and the American fort were in about the same spot, and that the Americans may have utilized some of the old French works, the demonstration of the presence of the French occupation will depend upon the identification of physical cultural remains that are exclusive to the French period. The Spanish presence should not be particularly evident since the fort was abandoned probably during the first years of that regime or earlier. Furthermore, after Spain took over the Louisiana territory, the French flavor remained. Nevertheless, imports were coming into New Orleans from Mexico and from Spain. It is possible also that the forts on both sides of the river may have had civilian use before they were in complete ruins, or that the buildings were sold as suggested by O'Reilly.

Presence of the French fort would be suspected if a continuous palisade of 6-inch square posts were found. Remnants of fascines (bundles of sticks) lining the ditches would be expected of both French and American periods. It is unknown if the entire American fort was finished with brick, but it is doubtful that it was. Therefore, palisades may have been used in the American fort also, but may or may not have been of the same size as the French palisades.

To demonstrate the French occupation, emphasis has been placed on ceramics since they are durable under archeological situations and are sensitive to change (Lunn 1977). Furthermore, 18th century French ceramics can be distinguished as a rule from Spanish, Spanish Colonial, and British ceramics.

France, as with other powers, forbade her colonies to trade with anyone other than the mother country, although there was contraband trade. This generally held true until the 1750s, when British boats arrived with merchandise because of Governor Kerlerec's policy that it was permissible under French law to get supplies even from the enemies (Miller-Surrey 1916:459).

Expected ceramics, then, for the time period of 1747 to 1762 should be principally from France, with some from England and probably other European countries. A French potter, Caussey, had come to New Orleans in 1722, but it is

unknown if he was able to establish a pottery-making tradition that continued.

The best dated ceramics for this period are from the archeological site of the French supply ship Machault sunk April 10, 1760 at the mouth of Restigouche River, Canada (Barton 1977). These were coarse earthenwares of three major types with other miscellaneous decorated and undecorated coarse earthenware. The descriptions of the three types are quoted from Barton (1977:48): "Type 1: green glazed white fabric ware; Type 2: slip decorated red fabric ware; Type 3: undecorated, unglazed, and partly glazed red fabric ware." These wares are in a variety of forms such as jugs, bowls, barber's bowls, porringers, cream pans, skillets, and cooking pots. Similar wares have been found at Fortress Louisbourg (Lunn 1977) and at Fort Michilimackinac (Miller and Stone 1970).

Coarse earthenwares, many similar to those found on the Machault, were by far the most commonly represented ceramics at Louisbourg. In addition, faience from France and Holland were found. These, dated from 1725-1755, have blue decorations and are in the styles of the LeRoy factory Marseilles, Rouen, and Nevers (Lunn 1977: Figure 4). More than likely, some of these were coming into New Orleans, since sherds are found at Natchitoches and Los Adaes, Louisiana (Gregory 1973), and Texas Spanish borderland sites such as Presidio Ahumada (Tunnell and Ambler 1967) and Mission Dolores de los Ais (Gilmore 1980).

German wares, such as Westerwals salt-glazed stoneware and British wares, such as scratch-blue and molded white salt-glazed stoneware dated about 1740-1770 were also found at Louisbourg, and some may be present at Fort St. Leon of the French period.

Since late 18th century saw a revolution in ceramic technology with the introduction of transfer printing, calcined flint, liquid glazes, and the introduction of creamware by Wedgwood, by early 19th century, tin-glazed ware (faience, majolica, delft) and white salt-glazed ware were displaced from the market (Miller 1980:1). Therefore tin-glazed wares and white salt-glazed ware should be indicative of the Colonial Period.

Some late 18th century Spanish and Spanish Colonial majolica ware may have been left at the fort by non-military usage during the Spanish regime. Trade with Spain and Mexico had been intermittent during the 18th century. About the middle of the century the Mexican majolica began to

duplicate European form and designs, and many forms were produced with flat bottoms, oval or hexagonal contours, and fluted rims (Lister and Lister, 1975:40). Puebla blue on white was still being produced and white majolica with the forms of platters, cups, and chamber pots with handles were being made. Thin vessels decorated in blue and brown came into production in the later part of the century (Gilmore 1974). Some coarse wares such as storage jars (olive jars) might also be expected.

American Period Model

The model for the American Period begins with the plan of the fort drawn in 1809 (Figure 7), labeled simply "Plan of the Fort at the English Turn New Orleans." Since the fort was damaged in the hurricane of 1812, it may be assumed it was re-built, but whether the plan actually represents what was built must await archeological investigations.

This was a small fort compared to the 1817 fort (Figure 10). It measures 160 feet maximum length without the rear bastions, and 212 feet maximum width measured along the levee front. It stood behind a levee about 45 feet from the water's edge, if the plan is a true representation. A line of brush or trees may be represented by the sketched-in line of running ovals near the river beach. Official records refer to "a battery of masonry."

Two buildings for barracks (Figure 7,A) each measure about 45 feet by 25 feet and could possibly house a garrison of 30 to 40 men. Each barrack had its own kitchen (Figure 7,K). The officer's quarters (Figure 7,C) could house about 6 persons. A powder magazine (Figure 7,P), a guard house and store (Figure 7,B) are also on the plan, as well as a raised way for musket fire (Figure 7,R). The plan shows a "road to be made" (Figure 7,O). A ditch does not seem to have been built.

There is little other architectural information on this building period or how much the fort was damaged in the hurricane. If all the buildings were destroyed and all that remained were the "Old Works" (Figure 8), possibly of masonry, then a layer of debris and artifacts should be expected which would represent this building phase. Presumably "Old Works" refer to the 1809 fort, but it is possible the reference was to older works of the French fort.

The clusters of mortared brick in the river at the

project area are in all probability remains of the American fort. They may be in situ, but most do not appear to be. They are, nevertheless, probably within a few feet of their original horizontal-plane location (see Appendix B). One block appears to be laid in common English bond, where a course of stretchers (long face) alternates with a course of headers (ends). This bond was used for thicker foundation walls because of its strength (McKee 1973:50). It was used in British Colonial America in the 18th century and continued in use in the 19th century principally for foundations where its strength was needed.

By the time the fort was being rebuilt from the hurricane damage of 1812, 2 arpents of land were purchased from J. Dupard. Since no purchase record was found for the land where the 1809 fort was built, it might be suspected that the 1809 fort was not on the Dupard property or that perhaps the 1809 fort was a temporary work, if it were not for the drawing of the "Statement of the Works" (Figure 8) showing the "Old Works." This drawing was made by Lafon in May 1813 during repair of the fort. It was apparently the fort that McRae, Wilkinson, and Claiborne were determined to finish. This process, however, was halted, and the "Statement of the Works" is a statement of progress when the work stopped.

By the time of the British threat of November 1814, repairs were again attempted, but were once more abandoned late in December. Starting on January 4, 1815, Captain Gordon was able to put the fort in a defensible status by January 18--taking 14 days. He mounted two cannon and erected a hot shot furnace. The 235 men at the fort no doubt were busy.

It is uncertain just what constitutes a defensible status. It does seem doubtful that the "Fort Projected" on Lafon's drawing (Figure 8) was put into full completion since the time was so short; furthermore, the completed fort of 1817 (Figure 10) has a different configuration. Quarters for men and officers may have been built during Gordon's building spree, although it is conceivable that tents were used. In all probability, the ditch around the fort was completed. In May 1813 (Figure 8), the ditch on the west side had been "dug to its full depth and faced with fascines on both sides" and "lined with picux from top to bottom," (Figure 8) and the remaining part of the ditch probably was finished in the same way. The drawing made in 1817 (Figure 10) at the time of the Bernard inspection probably depicts the result of, or at least some of, the effort in 1815. Since 14 days seems to be too short a period for a great

deal of brick work to be done, most of it may have been done previously when \$30,000 to \$40,000 had been spent.

When on November 6, 1820, Juan Pueche sold his habitation, an 8-arpent track upriver from the Dupard tract and the Fort, he also sold "2000 stones of which 1500 are worked into paving stones, 15 million [sic thousand] bricks...", making it possible that he was supplying both paving stones and brick for the fort construction.

Overlaying the three plans of the American fort on the Project Map (Figures 11, 12, 13), it is apparent the riverside battery is about the same size on all plans. The overlays were placed so that the brick concentrations would be near the riverside battery. After the 1812 hurricane, the fort was either enlarged or McRae made an error in his drawing of the 1809 fort. The ditches "lined with fascines and picux" (Figure 8) were enlarged, and if the position represents reality, the borrow pit the 1892 levee excavated part of the fort and added to the overburden where material was placed for the levee. Some of the "porous tiles" used to construct the levee might be expected in excavations in that area.

The finished fort of 1817 (Figure 10) has a somewhat different configuration of the 1809 fort and the "Statement of the Works", but it will be remembered it was put in a defensive status in 14 days. The furnace was located in the southwest corner, near the riverside battery, and it was in this general area where charcoal was found in the borings made in 1976 (Shenkel et al. 1977).

The ceramics for this period should be dominated by British wares from the Staffordshire potteries: edged, underglazed lined, transfer printed, dipped, and painted creamware (Miller 1980:20). "Creamware represents the cheapest whiteware available from the 1790s on through today," according to Miller (1980) in his study of economic scaling of ceramics of the 19th century. Sites in Canada from the War of 1812 have some blue transfer printed cups and saucers with brown-lined rim. Pearlware with a distinctive glaze was less prominent. These wares have been found at Williamsburg in a pre-1820 context (Noel-Hume 1972:236). As there were several potters in south Louisiana at this time (Greer 1981), locally made pottery as well as salt-glazed wares from the east coast may be present.

Guns and gun parts at the fort should be similar to those described by Meuse (1965). These include flintlocks such as the 1795 Springfield Musket with Bayonet (Meuse

1965: Figure 3). Muese suggests the militia, who were part of the Fort St. Leon garrison, were armed with everything from the "latest version of the Model 1795 to domesticated blunderbusses and fowling pieces."

Besides the militia, the precise company assigned to Fort St. Leon is unknown although some artillerists were present to operate the heavy artillery. At the third occupation at Fort Moultrie, South Carolina (South 1974) beginning in 1808, numerous buttons were found of the artillery companies: U.S. Regiment of Artillerists, "RA" with "2" in wreath; U.S. Light Artillery, "LA" with an arrow in oval; U.S. Artillery Corps, Eagle or Cannon "Corps"; and U.S. Army, Eagle with three stars. Some of these or similar buttons might be expected of the American occupation.

Since the militia was stationed at Fort St. Leon, it would be expected that a larger quantity of personal items rather than government issue items would be found. Horse trappings, such as bits, shoes, buckles, rings are probably present since horses were the principal mode of transportation.

Non-Military Model

The Prevost concession, stretching 76 arpents on the north side of English Turn Bend, had at least part of the habitation area near the French fort (Figure 3). The plan of the fort also shows the plan of the habitation area to be about 200 feet from the fort. The key to the plan is shown in Figure 3a.

Prevost, who was Agent of the Company of the Indies, probably did not live at English Turn since he had another concession, as well as a house in New Orleans. The inventory of his New Orleans home indicates he was an affluent person. The inventory of 1769 of his English Turn estate, however, indicates the habitation was not in the best condition. Presumably these were the buildings, or some of them depicted with the fort in 1749, 20 years before. No women's clothes were in the inventory and no slaves although there were "Three negro cabins." The residence was in "very bad condition." Other buildings were damaged and fences in ruins (Louisiana Hist. Quart. 1926: 412-457). Nevertheless, from the inventory, the plantation seemed to have been almost self-sufficient with a number of dependencies. Sugar cane was processed in four iron kettles on brick furnaces; the dairy produced milk and butter.

There were gardens and fruit trees. Goats and chickens were also kept.

When in July 1749 Prevost requested reimbursement for damages incurred with the building of the fort, 3125 pounds were subtracted for the value of the property where the fort was built. He asked to be paid for provisions, fences, a canoe, and rent of the house for the officers while the fort was being built [Doc. 30].

It is possible, therefore, that non-military goods from the plantation might be found in the fort area, and probable that some military artifacts would be found at the plantation site. It would also be expected that remains of provisions such as chickens, cows, and goats might be found at the fort site. It is also possible that the kinds of furnishings in the Prevost inventory may have been similar to the furnishings of the officers' quarters at the fort.

The four tracts of land on the curve of English Turn were, proceeding downstream, the Juan Pueche, Joseph Dupard, Constance Larch, and Rosette Toutan. These were all free people of color, but only Pueche and Dupard were residents of their property.

Juan Pueche brought 8 arpents in 1805 and 1806 from Prevost's heirs and held the property until 1820. In this 15-year span, he had accumulated 10 slaves, a number of animals and an assortment of tools for farming, carpentry, framing, milling, masonry, and cooper. He also cut wood, dressed stones, apparently made bricks, and grew and processed sugar cane. These trades are suitable for connection with a military establishment, but on the other hand they may have been for plantation use. Yet the quantity of stone (2000, 1500 worked and brick (15 million [thousand]) and firewood (150 cords) (Shenkel et al. 1978:69) could indicate Pueche was in commercial production.

Dupard, who bought his 11 arpents in 1805 from Prevost's heirs, sold 2 arpents to the U.S. Government in January 1813, although apparently a fort had been on the property since 1809. It was during 1813 that Dupard made a complaint about the soldiers "depredations committed on his property," but not long after, he joined the Louisiana militia in General de Clouet's regiment, which was stationed at English Turn (Shenkel et al. 1978). Here again with Dupard living nearby there would be the probability of a mixture of military and non-military artifacts at the fort, as well as at the plantation.

Hypotheses Based on The Model

H₁: The French fort of 1747 to about 1763 was built at the Dupard property line, where the later American fort was built and which utilized part of the old works of the French fort.

If this is so:

1. Structural remains related to both French and American periods should be encountered.
2. Portable cultural remains should be of the French period and the American period with the latter superimposed on the former with few Spanish remains between.
3. Physical cultural remains may be mixed and not in discreet layers because of post-occupation disturbances such as floods, levee building and excavation.

H₂: The French fort was somewhat east (upriver) of English Turn Light.

If this is so:

1. Structural remains of the French fort should be encountered.
2. Portable cultural remains should be principally of the French period, with some early 20th century remains of logger houses.
3. Part of the Prevost plantation cultural remains should be east (upriver) of this position between here and the American fort.
4. Physical cultural remains may be mixed because of the long abandonment of the fort and erosion by the river.

These hypotheses were tested by archeological excavations.

ARCHEOLOGICAL TESTING OF MODELS AND HYPOTHESES

Field Operations

Field operations began on August 13, 1981 with a preliminary ground survey of the study area. The effort was successful in relocating several landmarks recorded by previous researchers (Shenkel et al. 1977).

Unfortunately, recent improvement of the extant 1941 levee system had destroyed, or made inaccessible, two key benchmarks used in establishing the 1976 excavation grid of Shenkel et al. (1977). Both Point "B" and Point "C", necessary to re-establish the site grid (Shenkel et al. 1977:2-2), had been lost in upgrading the levee to its present height. Furthermore, the two points used to maintain vertical control at the site, TBM#8 on the levee slope and a nail in the overload pipeline support, could not be relocated with any certainty. Consequently, the excavations reported here were initiated without benefit of reference to the established survey controls of 1976. Nevertheless, work proceeded under the assumption that the locations of all trenches and units could be reconciled with the Map of Record made by Shenkel et al. (1977) at a later time. Using several permanent landmarks, such a superposition has been accomplished.

In the next several days, the staff prepared the site for initial backhoe trenching as proposed in the research design (Gilmore 1981:61-62). With a full crew assembled, excavation began in earnest on August 17, 1981. The field and lab crews comprised the following individuals: Kathleen Gilmore (Principal Investigator), Vergil Noble (Field Manager), Leonard Allen, David Journey, Kevin McConnell, Nancy Reese, Louis Sardelli, Christi Winchell, Frank Winchell, and Bonnie Yates. Later, David Baker joined the field crew.

During the 9-week field season, a total of 22 backhoe trenches were thus executed. Twelve of these were aligned parallel to the river at approximately the 2-m contour and centered about the concentration of mortared brick at the water's edge. Four others paralleled the river between English Turn Light and the overhead pipe. The remainder were excavated at various locations and angles as deemed necessary in the judgement of the field supervisors (Figures 24, 24a, 24b).

In addition, 10 controlled excavations (four 3-m

squares and six 1- x 2-m units) were hand excavated in either arbitrary or natural levels as appropriate. Placement of these units was determined by consideration of the archeological evidence noted in certain trenches and the documentary evidence provided by available plans of the fort (Figure 24a, 24b).

Vertical and horizontal controls on the excavations were maintained with reference to an arbitrary datum established by the field crew. This benchmark consists of an aluminum pipe set in cement, due north (landward) of the central brick concentration at the waters edge. It is located near the tree line within an old road cut to the levee (Figure 24a). All depth measurements during excavation were taken with respect to the ground surface (i.e., the leveled cement) at datum.

All excavation efforts at the site during the 1981 field season are subsequently reviewed in greater detail in this report. Such discussions encompass both basic descriptive data and any interpretations that may be derived from a consideration of the totality. These observations are made in light of the documentary record, the models of the research design, and previous archeological testing at the site.

Description of Excavations

The following description considers each excavation unit and exploratory trench individually. The discussions incorporate relevant details from other excavations as warranted. Complete artifact inventories for each provenience appear in Appendix D. In addition, profiles and plan drawings recorded during the 1981 field season are included for each backhoe trench and excavation unit (Figures 33 through 53).

Twenty-two exploratory trenches were examined during the 9-week field project. At the outset, nine trenches aligned at approximately the 2.4-m contour on an east-west trending axis, were excavated after initial brush clearing. As planned in the Research Design, these were 10 m long and spaced at 10-m intervals (Gilmore 1981:62).

In the interest of time and cost-effectiveness, a backhoe was used to excavate the bulk of each trench. Shovels and trowels were then employed to trim and to clean the profiles in preparation for recording. The backhoe operator found he could work most efficiently by removing

two contiguous bucket loads for the entire depth and length of each trench. Consequently, the trenches measured about 1.5 m wide when first dug out, rather than the proposed 1 m. The average width does not take into account the shallow, bucket-wide step on either side or any incidental broadening of the trenches by slumpage.

Depth of the first trenches was standardized in response to a dense clay zone approximately 1.5 m below the current ground surface. The occurrence of early 19th century artifacts along the interface of this layer suggested that the clay represented a cultural zone and perhaps an old surface. According to Saucier (see Appendix B), this definitely appears to be the natural levee surface on which the forts were constructed based on both lithological character and elevation. Another factor of concern was the prevailing high water table. Groundwater seepage at this depth was considerable and was a constant problem throughout most of the field season.

Subsequently, the original line of backhoe trenches was extended both east and west. Several other trenches also were implemented off that line in order to examine areas of potential interest. These varied in length and depth as deemed appropriate to the conditions of each position. In addition, four 10-m trenches and a single 1-m trench were placed on the bottomland area bounded by the overhead pipe and English Turn Light (Figure 24a).

Each trench was inspected for evidence of cultural activity and prepared for recording. Both color and black-and-white photographs, as well as scale drawings, were made for at least one profile in each trench; typically both long axis walls were recorded. In some trenches, the narrow end profiles also were examined and documented.

Backhoe Trenches

Backhoe Trench 1A (BHT 1A) (Figure 32). BHT 1A was the easternmost (upstream) excavation accomplished using heavy machinery. Two small, controlled excavation units, however, were located farther upriver from BHT 1A. This backhoe trench represented an eastward (upriver) extension of the initial trench line. Its purpose was to delineate more clearly the limits of the site area.

The north and south profiles of BHT 1A both exhibited generally level-bedded strata. These in all probability represent sequential episodes of flooding and deposition.

There is the possibility, however, that the soil sequence is not continuous, but rather the end product of occasional deposition, stability or removal, and resumed deposition.

The horizontal lines of strata are in places broken on either profile by subtle dips into lower strata. These departures from the general soil pattern most likely resulted from scouring around fallen branches, etc., where flood waters would be quite agitated. Though some of these unconformities resemble post molds, close examination showed no strong evidence to suggest they are cultural features.

At the floor of BHT 1A, the top of a dense, dark clay zone was apparent along much of the length of both profiles. This is the clay zone, noted generally across the site, that has been interpreted to represent a ground surface contemporary with at least the 19th century fort (see Appendix B). Encountered at approximately 140 cm below the ground surface, this zone was 25 cm thick where it was completely exposed at the western end of the trench.

Not surprisingly, given the distance from the main site area, there were no artifacts or other cultural materials noted in the clay. Indeed, the clay was slightly lighter in color than corresponding strata containing cultural materials and consequently more organics. A large chalky concretion, believed to be mortar, was in a lighter, silty clay layer directly beneath the dark clay zone.

Very few artifacts were recovered from BHT 1A. Most notable, however, was a brown lead-glazed redware rimsherd. This sherd was found in the trench floor 4.5 m from the west end. It has been identified as part of a bowl of Liguria ware from near Genova, Italy (Gussett 1983) and is present in rather small quantities in mid 18th century French sites in Canada. Vessels of this type were on the Machault, wrecked in Restigouche Bay, Canada in 1760 (Barton 1977). According to the Model this is one of the ceramics expected, and is indicative of French occupation (Plate D-1:i).

Backhoe Trench 1 (BHT 1) (Figure 32). BHT 1 is first in the original series of nine exploratory trenches, numbered from east (upstream) to west (downstream). Although this trench seems to lie outside of the fort proper, a good number of artifacts were found in the profiles and backdirt. These, however, largely post-date the military occupations of the site and are most likely related to subsequent plantation activities.

For the most part, the strata in BHT 1 are horizontally

bedded and show no indication of cultural disturbance. Occasional unconformities would seem accountable to natural formation processes. One zone, approximately 2 m from the east end of the north profile, consisted of a dark gray, gritty, organic soil. This lens contained several pieces of bone, shell, wood, and sherds of undecorated white ware. Configuration of the soil zone, however, does not suggest that the feature resulted from purposeful action. Rather, it seems that these materials are water-borne deposits.

Of further interest is the dark gray, dense clay zone that runs the length of both profiles at the trench floor. This stratum has been interpreted as a relict ground surface associated with the fort occupation. Approximately 1.0 m from the west end of BHT 1, a highly corroded length of chain was found in the north profile. The specimen's condition, however, prevents any possible determination of age.

Other artifacts recovered from BHT 1 included a "gaudy Dutch" handpainted underglaze ceramic handle and a white clay pipe fragment. The latter is marked with a star on either side of its spur (Plate D-2:k). Though fragmentary, the configuration of the stem, spur, and bowl resembles a form popular between 1820 and 1860 (Nöel-Hume 1969:303). These would both imply association with the site's post-military period.

Backhoe Trench 2 (BHT 2) (Figure 34). BHT 2 exhibited virtually uniform stratigraphy with few departures from the horizontal. Flooding episodes appear to be evidenced by the regular soil sequence comprising six zones in both the north and south profiles. Small, parabolic extensions from the bedding plane of some zones pinch out in the next lower stratum, but these are few. One such feature in the fourth layer, a dark, grayish-brown clay loam, is located approximately 2.5 m from the west (downriver) end of the north (landward) profile. This particular anomaly, though not cultural, is worthy of mention since it contained a piece of barbed wire. Thus, this meter-deep stratum is concluded to post-date the Civil War era (Clifton 1970). Saucier (Appendix B) is of the opinion that this layer was deposited by one major flood, which probably occurred in 1927.

The dark gray, dense clay zone underlying the above-mentioned depositional sequence did not reveal any cultural material in the trench profiles. A white clay pipe stem, however, was found in the backdirt pile of BHT 2 within the clay matrix. While in hardly an ideal context,

this at least suggests that debris was present on the relict ground surface.

Backhoe Trench 3 (BHT 3) (Figure 34). BHT 3, exhibited the same sequence of flood deposit beds as noted in BHT 2. The artifact collection from this trench is small.

The only aspect of the stratigraphic profile that merits attention is a plywood board located at the base of the first soil zone. This artifact would indicate that the 60 cm of laminated sands above it were deposited in recent times. Although it was first patented shortly after the Civil War, plywood of high quality was not developed until the time of World War I and the early years of the aviation industry. Even greater advances were made during the 1940s when World War II created a need for strong, non-metallic building materials. Since that time, production of thin, multi-layered plywood has steadily increased (Hudson 1972: 76-77). It is reasonable to assume, therefore, that the plywood found in this unit dates from no earlier than the second quarter of the twentieth-century and probably since 1945.

In addition, the dense clay layer at the floor of BHT 3 contained a brick fragment. From general appearances, this artifact in the occupation zone, resembled the bricks constituting the large concentrations at the water's edge.

Backhoe Trench 4 (BHT 4) (Figure 35). This trench, located due north (landward) of the upriver brick masses, was near the presumed main occupation area at the site. It was no surprise, therefore, to find a higher incidence of cultural material in BHT 4. Brick fragments were more numerous in the profiles, than in the more outlying trenches.

The strata visible in BHT 4 were more undulating than those in trenches already described. Nonetheless, it did not seem that the variability in bedding was related to cultural activity. Rather, several tree stumps and root systems are likely the cause of these phenomena.

At the floor of the trench, the dense clay zone again lay beneath six distinct soil zones. Several brick fragments and crumbs were recovered from this presumed occupation zone. Further, intermittent flakes of mortar also were present. No diagnostic artifacts were noted, however.

The stratum immediately overlying the gray clay yielded

a sherd of undecorated whiteware 4 m from the east (downriver) on the south profile. A slight bluish cast to the glaze suggests that the sherd may be a pearlware. Therefore, it is unlikely that this mottled sand and clay zone was deposited before the 1780s (Noel-Hume 1969:394, Price 1979:10-11).

Both ends of BHT 4 were extended slightly and cleaned after initial recording of the north and south profiles. The results of this extra effort, however, were negligible, for no significant differences were noted.

Backhoe Trench 5 (BHT 5) (Figure 35). Located directly north of the central mortared brick concentration near the bankline, BHT 5 revealed horizontal, gently rolling stratigraphic layers. Artifacts were relatively plentiful in this trench, but none were clearly datable to either fort period.

Immediately below the topmost zone of the laminated sand, several intermittent lenses of oxidized, clayey sand occurred, particularly on the north profile. These would seem to represent outwash channels that drained an old ground surface.

The dense basal clay layer was not visible continuously in BHT 5, owing to the undulation of the trench floor. It was, however, higher in artifact content than analogous strata in the previously described trenches. Brick fragments and mortar particles were fairly numerous, with the latter occurring in heavy concentrations, as well as being scattered throughout the clay deposit.

Also found were two isolated bone fragments that have been identified as fragmentary human cranial and vertebral elements. These were noted rather high in the south profile and are probably not associated with the fort occupation. Rather, the bones were more likely washed in and deposited during a later flooding episode.

Backhoe Trench 6 (BHT 6) (Figure 36). BHT 6 contained a high incidence of brick rubble and mortar pieces in the basal stratum. This dense clay layer, presumably an occupation zone of the American fort period, was overlain by several separate deposits. At least half of this accumulated sand and silt is of recent origin, as evidenced by the presence of a Vienna sausage can approximately 70 cm below the present ground surface.

Among the brick rubble in the gray clay stratum were

numerous pieces of slag and cinder. These could be related to furnace operations documented during the American period, though also they could have been washed in from elsewhere by the river. Sherds of undecorated whiteware found in the backdirt of this trench can be perhaps more reasonably attributed to fort activities.

The brick rubble encountered in BHT 6 may well be continuous with one noted in BHT 7, 10 m to the west (downriver). Brick was exposed to within 7 m of BHT 6 through excavation of Unit 3, and probing from the ground surface between the two trenches struck brick at the proper depth in many places. If the brick scatter is indeed so extensive, it is logical to assume that a substantial brickwork would have stood in this locality.

Backhoe Trench 7 (BHT 7) (Figure 36). This trench, located in the central part of the main site area, revealed a substantial concentration of brick fragments and flecks of mortar along its base (c. 1.4 m below surface). These were in the dense gray clay zone, which has been interpreted as a ground surface contemporary with occupation of the American Fort St. Leon.

Only two major soil zones superceded the basal clay, though minor lenses were present. Fairly modern materials, such as a steel cable, in these upper zones would suggest their recent deposition.

Extension of the east end of BHT 7 in order to facilitate groundwater drainage came upon an extensive brick scatter. Immediately atop the scatter of brick fragments were several preserved organic materials, including a boot heel, wood shavings, and, protruding out of the north profile, a hewn timber. Association of these materials with the underlying bricks was unclear in BHT 7. In subsequent excavation of a 3-m square overlapping this end of the trench, however, it was obvious that these and other materials had been deposited on top of the brick scatter at some later date (see discussion of Unit 3). Excavation of a second 3-m square alongside the north (landside) profile of BHT 7 gave similar testimony (see discussion of Unit 4). They may be remains of the lumbering activities of the early 20th century.

Backhoe Trench 8 (BHT 8) (Figure 37). BHT 8 evidenced a slight stratigraphic depression in the western third of the north profile, but this was much less pronounced than similar strata in BHT 9. Extension and recleaning of the west (downriver) end of BHT 8, however, revealed strata that merit discussion.

These strata appear directly beneath the top layer of laminated sands and seem to be truncated by that horizon. At the west (downriver) end of the north (landward) profile, four alternating bands of sand and clay are evident. These form a shallow depression, rising toward the spot that was the original end of the trench before extension. Subsequent inspection of the west profile showed that at least the second clay layer levels off to form a flat surface under the laminated sands. It is probable that the sand layers and upper clay zone, which overlie this stratum in the north profile, also followed this pattern. Truncation of these zones, however, has erased any such evidence.

The configuration of this soil series does not seem to be the result of natural deposition. The steep, yet even layering of sand and clay suggests artificial and purposeful placement. Further, the position of this soil feature relative to the soil depressions in BHT 9, 10 m farther west, suggests the possibility that the evidence in BHT 8 could be interpreted as an interior rammed-earth wall face, if the BHT 9 strata are correctly interpreted as evidence of a moat system. It should be noted, additionally, that the distance separating these two distinct anomalies is in reasonable agreement with the recorded fort dimensions on the 1817 plan. If the features do not actually represent a moat/wall system, then the coincidence is remarkable.

Unfortunately, few cultural materials were encountered in BHT 8. Further, those collected are in no way diagnostic. As a result, additional excavation in this area will be required to assess the significance of the evidence found in BHT 8 and 9.

Backhoe Trench 9 (BHT 9) (Figure 37, Plates 3,4b). BHT 9 was the last in the original series of backhoe trenches, and patterns of stratification here are suggestive of moat fill. Further, beneath the several soil depressions, a clear cultural zone was evident in the basal clay deposit (c. 1.3 m below surface).

Inspection of the north (landside) wall profile revealed three major parabolic depressions in overlapping series. The largest of these, near the east (upriver) end of the trench, cut through an earlier filled central depression, which in turn seemed superimposed over dipping strata at the west (downriver) end of BHT 9. A fourth soil depression was intrusive upon the first, and a long, shallow clay deposit lay atop the eastern three-quarters of this sequence.

It is difficult to imagine such stratification being the result of natural processes. Rather, it is best interpreted as the result of purposeful excavation in separate episodes, perhaps in the maintenance of a continuously filling moat. Without doubt, any moat system in use for an extended period would require periodic dredging as sediments build up within it. It is also logical to assume that each successive moat cleaning might only dredge part of the wide ditch and that these channelings would overlap. Such a practice would be easier than cleaning out an entire water-filled moat each time.

Alternatively, it could be that the soil patterns in BHT 9 represent disturbances subsequent to occupation of the fort. Perhaps the depressions resulted from the cutting of drainage channels associated with a later plantation, or with borrowing activities associated with levee building.

Unfortunately, the different strata apparent in BHT 9 can only be dated relative to each other through the principle of superposition. Having found no temporally diagnostic artifacts in any soil zone, an absolute range of dates is impossible.

The intrusive depression near the east end (upriver) seems to have filled rapidly, since no major soil breaks are evident except at its base. Within this lower zone of clay, a high organic content was notable. In addition, there was a concentration of branches protruding outward from the profile. One of these exhibited a clean, angled cut not of recent origin. Subsequent excavation of a 2- x 1-m test unit over this section of profile revealed a number of aligned branches settled in the bottom of this depression (see discussion of Unit 7). These possibly could represent a fascine bundle fallen from a wall facing.

Corresponding strata in the south profile indicate that each of these sediment-filled ditches are angled toward the west (downriver) from south (riverward) to north (landward). This alignment reasonably conforms to that documented for the American fort plan of 1817.

Beneath these strata lay the dense clay horizon noted elsewhere at the site. Within the upper few centimeters of the horizon, small particles of brick and mortar were apparent. As in Unit 4, an unconformity was observable in the clay below which there was only culturally sterile clay. The break was quite clear.

The presence of an unquestionable cultural zone below the filled soil depression might argue against the possibility of the depression being remains of a moat. It could be, however, that a moat system was superimposed over an earlier surface. From the available evidence, no conclusive statement can be made at this time.

Backhoe Trench 10 (BHT 10) (Figure 38). BHT 10 contained no cultural material and the stratification was principally horizontal and exhibited few features. This negative evidence lends credence to the supposition that the western (downriver) limit of the fort site was intersected by BHT 9, located 10 m east (upriver) of BHT 10.

Only the south (riverside) profile was recorded for BHT 10, since much of the north wall was lost when it collapsed during excavation. Soils in this area of the site appear much less compacted than in other areas and, therefore, were too weak to support the profile. Fortunately, the south wall, which for the most part reflects the north, was photographed and drawn before it, too, fell.

The soil zones evident in BHT 10 essentially were all on a horizontal plane, except at the eastern (upriver) end. These, intrusive lenses of clay and loam broke the continuity of the three major deposits. This trench is on the periphery of the 1941 borrow pit (Figure 32) and these strata may represent activities related to filling the pit.

No artifacts were collected from BHT 10, though a modern ketchup bottle was noted in the upper soil intrusion, approximately 2 m from the east end of the trench. No brick or mortar pieces were encountered, in spite of their prevalence at the site.

Backhoe Trench 11 (BHT 11) (Figure 38). BHT 11 was the westernmost (downriver) trench excavated in the main site area. Together with BHT 10, it represented an extension of the original trench line. As was the case in BHT 10, this trench was lacking in evidence of cultural activity contemporary with occupation of Fort St. Leon.

A major stratigraphic depression was noted in the south (riverside) profile centered at 3 m from the east end (upriver). Unlike similar depressions in BHT 9, this was continuous with the first soil horizon. Elsewhere, the first horizon seemed to truncate lower strata, as though the ground surface had been graded off. It is likely, therefore, that this filled depression represents a fragment of the borrow pit (Figure 32).

No artifacts were collected from BHT 11, though a modern bottle was noted in the south profile (55 cm below surface). Its position at the base of the second soil horizon near the west (downriver) end of the trench demonstrated that at least half of the soil column had been deposited in the 20th century.

Backhoe Trench 12 (BHT 12) (Figure 39). BHT 12 was the first of four initial trenches excavated on the batture flats between the overhead pipe and English Turn Light (Figure 24b). The stability of profiles in this area was extremely poor, and many sections collapsed as the trenches were being excavated. Accordingly, only one profile face was recorded for each of these four trenches.

Stratification in BHT 12 consisted of a series of horizontally bedded layers incorporating fine laminations. The basal gray clay layer in BHT 12, however, was somewhat softer than it appeared in the previously described trenches. Its texture and consistency recalled a fine modeling clay. This trench is in an area of the borrow pit of 1912 and 1941, and no doubt represents filling of the pit, perhaps with old levee material. No evidence of any cultural material was present in BHT 12. The trench was culturally sterile from surface to floor.

Backhoe Trench 13 (BHT 13) (Figure 39). The stratigraphic layers noted in BHT 12 also were present in BHT 13, 10 m to the west (downriver). In this trench, however, the first horizon extended much deeper, and the two zones underlying it were much thinner. The zone of gray clay at the trench floor, as in BHT 12, was soft and pliable. This trench is also in the area of the old borrow pits of 1912 and 1941.

BHT 13 was completely devoid of any cultural material. No artifacts or bone were found either in the profile or the excavated fill.

Backhoe Trench 14 (BHT 14) (Figure 40). A group of trees prevented continuation of the line begun with backhoe trenches 12 and 13. Therefore, it was necessary to offset by 10 m to the north (landside) to excavate the remaining two trenches.

BHT 14 had severe groundwater flooding at a very shallow depth. Stratification was more complex here than in either BHT 12 or 13. Part of the reason for the difference is accountable to purposeful land filling operations. The east end sump hole, which cut well into the gray clay zone,

revealed a concentration of buried timbers. It is known that in maintaining the toe area of the levee, driftwood is often bulldozed into existing depressions. Indeed, the completed BHT 12 was used inadvertently for just such a disposal while project workers were elsewhere on the site. It is likely, therefore, that this entire clearing has been subject to considerable disturbance. This trench was also in the area of the old borrow pits. No artifacts were found in BHT 14.

Backhoe Trench 15 (BHT 15) (Figure 40). Last in the group of four trenches in the lower site area, those nearest English Turn Light, BHT 15 produced no archeological features or materials. As was the case with the previous three trenches, BHT 15 was culturally sterile, and was in the area of the old borrow pits.

Little evidence of recent disturbance was noted here, however. Three major soil zones were delineated, none of which contained any cultural material. The only observation worthy of mention is that higher proportions of clay occurred in the upper strata.

Backhoe Trench 16 (BHT 16) (Figure 41). This trench was excavated north (landside) of Unit 2 and parallel to the original trench line at the site. It was inferred from the possible west wall system (downriver), evident in BHT 8 and 9, that the analogous east wall (upriver) should be in this area. Since no wall or moat was indicated in either BHT 3 or 4, it was planned to locate another trench farther from the river in the interval between those two trenches.

Although a stratigraphic depression was apparent in the north (landside) profile of BHT 16, this was far less pronounced than those observed in BHT 9. Indeed, the entire stratigraphic sequence was ill defined and difficult to discern. As a result, the evidence cannot be considered fort-related with any confidence. If the stratification here were in fact reflective of a moat system, then it is clear that this part of the site was subject to much greater disturbance than the downriver side.

It is probable that the soil profiles in BHT 16 represent construction of an earlier levee system. Immediately north (landward) of this backhoe trench, some surficial expression of the presumed 1912 levee is still visible. Further, the soil characteristics noted in the north-south trench BHT 19, where it intersected that line, were quite similar to those in BHT 16.

A few pieces of brick rubble were observed in the profile faces, and one fragment was collected from near the bottom of the trench (1.4 m below surface). No other artifacts were encountered in BHT 16, making interpretation of the soils data all the more difficult.

Backhoe Trench 17 (BHT 17) (Figure 42). BHT 17 was excavated as a 1-m trench north of Unit 1 and parallel to the initial trench line. The purpose was to determine whether the presumed moat line evident in BHT 9 continued through this area. Not finding any indication of such a depression, BHT 17 was later extended farther west by hand. Even with this additional 12 m, no clear trace of any fort-related materials was to be found.

The soil column in BHT 17 consisted of several horizontally-bedded loams, each having a high organic content. A decayed leaf mat was present between some of these zones. By all appearances, this pattern of stratification resembled a section exposed subsequently in BHT 19. That later excavation crosscut a known borrow pit edge and revealed the same sort of deposition noted in BHT 17, though along a different plane (see discussion of BHT 19). Therefore, although no surface expressions of a borrow pit are observable, this trench was placed in the 1940-1941 borrow pit area (Figure 32).

Artifacts found in the profiles of BHT 17 indicate that much of the deposition here has occurred within recent years. For example, a penicillin vial bearing a 1963 expiration date was collected from the second major horizon. An aluminum aerosol can also was found in that layer. Lower in the profile, a screw-top jar was retrieved from the fourth horizon, very near the trench floor. This jar was manufactured by the Owens-Illinois Glass Co. in 1940, as evidenced by the mark on the base (Toulouse 1971:403).

As testimony to the admixture of materials in these deposits, a probable 19th century tabasco bottle was collected from the same stratum that yielded the penicillin vial and aerosol can. Embossed with the legend, "McIlhenny Tabasco Sauce" on its base, the mold-seam configuration indicates the bottle was produced by a semi-automatic machine. Newman (1970) estimates that such bottles most likely might be deposited during the period 1880 - 1913. Thus, to find this bottle in association with obviously recent materials indicates a highly mixed archeological deposit.

Backhoe Trench 18 (BHT 18) (Figure 41). BHT 18 was

excavated on an angle oblique to the river, below the original trench line. Nine meters in length, the trench angled north (landward) from west (downriver) to east (upriver). Its position, roughly between the positions of BHT 4 and BHT 3 to the north, was determined by the inferred location of the fort's east wall and moat system. It was hoped BHT 18 would intersect evidence of those features, since other trenches on higher ground had failed.

These expectations notwithstanding, no evidence of cultural disturbances was found in BHT 18. The strata, by and large, were uniform deposits. These tended to slope upwards from the river, as does the natural ground surface. The only point at which the stratification departed from the norm was near the north (landside) end of BHT 18. This anomalous situation, however, is probably accountable to the natural terrace through which the trench cut.

No materials were collected from the trench fill. Several modern glass and ceramic sherds were noted in the profiles, but none were diagnostic. A small brick fragment also was exposed in the east profile within the basal gray clay.

Backhoe Trench 19 (BHT 19) (Figure 43, Plate 4a). BHT 19 was the most extensive of all backhoe operations at the site. Oriented on a north (landward) south (riverward) axis, the trench measured 15 m long and over 2 m deep. Both profiles were stepped at approximately half the depth to the trench floor. The purpose of this trench, located north of the BHT 4 and 5 interval, was to investigate levee building activities and their possible impacts upon the fort site.

The trench was positioned so that its north end fell within the edge of a borrow pit dug in constructing the 1941 levee. From there it crosscut the line of the 1912 levee, of which a surface expression is still visible locally.

This area of the site was also where a concentrated brick scatter had been evident on the ground surface. Numerous other brick fragments were noted during excavation of the trench.

At the northern extent of BHT 19, both the east (upriver) and west (downriver) profiles reflected incremental filling of the borrow pit. This was evidenced by a sequence of several shallow alluvial deposits, sloping gradually toward the surface from north to south. Many of these exhibited a high organic content along their superior surfaces, undoubtedly the consequence of a decaying leaf mat.

The original south (riverside) edge of the borrow pit seems to be located 15 m from the north (landward) end of BHT 19. Here, the sequence of narrow, slanting deposits ends, and much thicker beds prevail. The latter seem to represent deposition on the back slope of the 1912 levee system.

The center of the 1912 levee is indicated between 10 and 11 m from the north (landside), particularly in the east (upriver) profile. At this point, the aforementioned strata peak and then fall to the south (riverward). Soil zones in this central area are discontinuous, and heterogeneous, resembling dragline-loadings rather than natural accumulation.

Brick pieces appeared randomly in these strata, particularly on the down-sloping riverward face. This would indicate that fort-related materials were incorporated into the levee mound, either purposefully or inadvertently. Worthy of note, also, is the presence of several brick fragments at the first major soil interface near the south (riverside) end of BHT 19. These fragments may have been washed up against the levee toe and later buried by flood deposition.

Only two artifacts were collected from BHT 19. The first is a sherd of cream-colored earthenware found on the back-slope fill of the 1912 levee. The other specimen, found in backdirt taken from the south end, was a chunk of porous tile, perhaps similar to those described as part of the 1892 levee. Since the artifact was not found in situ, it is impossible to determine if the tile was incorporated into the levee mound or deposited against it at some later time.

Backhoe Trench 20 (BHT 20) (Figure 44). BHT 20 represents a 5-m extension of Unit 5. Starting at the east profile, the line of that 2- x 1-m unit was extended eastward (upriver) in order to investigate this beach more thoroughly.

No evidence of a fort wall, or any other cultural feature, was noted in BHT 20. For the most part, stratification in this extension was identical to that in the original Unit 5. The gritty hardpan lens noted in the 2- x 1-m unit, however, here was more pronounced, thicker, and continuous. All other strata were level-bedded.

At the base of BHT 20, in the gray clay zone, a brick fragment and a cut board were found. Though neither was datable, their stratigraphic position suggests contemporaneity with the fort.

Backhoe Trench 21 (BHT 21) (Figure 44). This final trench was excavated at the water's edge near English Turn Light. This location was also immediately north (landward) of a small concentration of mortared brick and east of a cistern foundation reported by Shenkel (Shenkel et al. 1977:4-4). Attempts to relocate this foundation failed, however, as it presumably has been covered by subsequent floods. Since investigation of BHTs 12-15 produced no fort-related information, it was hoped that a trench closer to the river would encounter remains in this area marked as having high potential by the 1976 research project.

Owing to the proximity of BHT 21 to the river, the dense, gray clay zone was encountered almost immediately below the surface. Only a thin band of dark sand, approximately 1 cm thick, and 40-50 cm of recent beach sand accumulation lay above it. It was noted, however, that below the dense clay, which measured approximately 50 cm, lay another clay deposit. This basal zone was darker in color and had a crumbly texture.

No artifacts were retrieved from BHT 21, though a modern bottle fragment and a few brick crumbs were visible in the profiles. These were obviously the results of recent water transport and deposition.

Excavation Units

Ten hand-excavated test units were made during the 1981 field season at Fort St. Leon. Four of these were 3-m squares, whereas the remainder all measured 1 m x 2 m. Placement of these units was influenced by evidence found in several backhoe trenches and by the desire to investigate areas where use of a backhoe was inappropriate.

Units were excavated in natural soil layers where they were encountered and some in arbitrary levels. Depth of excavation was measured relative to the ground surface at a permanent datum point placed on the site. Photographs and scale drawings of the troweled floors and profiles were made routinely.

Unit 1 (Figure 45). The first 3-m square excavated during the 1981 field season was prompted by the presence of

a possible remnant moat in BHT 9. A series of dipping strata noted in the profiles of that trench suggested that a moat exterior to the west (downriver) fort wall formerly had passed through this area of the site. Unit 1, therefore, was proposed to test for continuation of the line farther north (landward) of the trench. In addition, a .5- x 10-m magnetometer grid was established north of BHT 9 to check for associated anomalies. Unit 1 was located in the southwest corner of this east-west oriented grid.

Since the uppermost distinct soil zone in BHT 9 obviously represented a recent depositional episode truncating the parabolic strata, the first 60 cm of Unit 1 was removed without screening the fill. This established a natural level at the soil interface, beyond which controlled excavation proceeded.

The floor of Level 1 was markedly heterogeneous, exhibiting no definite soil pattern. Laminated sands were predominant, though these were mixed in amorphous zones with clay, silt, and/or dark organic soil. The high incidence of organic material was suggestive of a decaying tree fall, and indeed a recent stump and root system also was present in the northeast quarter of the unit. Leaching of this material into the surrounding soil matrix effectively obscured the primordial soil characteristics throughout much of the unit.

Discrete soil zones became somewhat clearer after removal of an arbitrary 10-cm level. At that point a subtle expression of a southwest to northeast linear trend became apparent. Nevertheless, the evident alignment of soil zones in Level 2 was hardly adequate for interpretation. Further, screening of the fill from this level produced minimal material, all of which was attributable to recent times. The presence of recent specimens here would not deny the possibility that this fill is fort-related. To the contrary, one might well expect that the slow filling of a moat or ditch depression over time would incorporate materials post-dating its actual use. No strong suggestion of a moat feature was apparent in the floor of any level. Further, increased moisture from the high water table made inspection of floors virtually impossible by 115 cm below datum. Excavation of Unit 1, therefore, was halted at this point.

Presence of dipping strata was indicated, however, in both the east (upriver) and west (downriver) profiles of the unit. Soil layers in both these opposite walls took a downward dip from south to north, once beneath the upper 60

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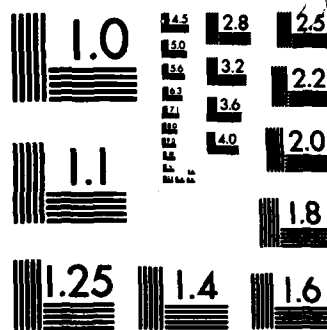
ARCHEOLOGICAL TESTING AT FORT ST. LEON (16PL35)
PLAQUEMINES PARISH LOUISIANA (U) NORTH TEXAS STATE UNIV
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cm of laminated sands. This being the case, it appeared that the line suggested in BHT 9 had changed angle.

Artifacts recovered from Test Unit 1 that exhibited temporally diagnostic attributes were all very recent materials, dating from the mid-20th century at the earliest. Others may be older, but are so fragmentary, or span such a long time range, that they are of little interpretive value. Ten samples for lead-210 and cesium were taken at 10-cm intervals on the west profile. The results for lead-210 were negative. Cesium tests were not run.

Unit 2 (Figure 2). Unit 2, a 3-m square, was situated between Backhoe Trenches 3 and 4, slightly north of their alignment. This location was determined by measurement of the recorded distance from the west (downriver) moat to the east (upriver) moat on the 1817 fort plan (Figure 10). Assuming that the west (downriver) moat was present in BHT 9, it was reasoned that the east (upriver) side should be evident in the vicinity of BHT 3 or 4. Since there was no indication of such a feature in the profiles of either of those trenches, Unit 2 was intended to investigate the interval between them. Prior to excavation, the area about Unit 2 was first surveyed by magnetometer (Figure 11 and Appendix E).

As with Unit 1, about 100 m downriver, a recent deposit of laminated sands and silt comprised the first major soil horizon. Here, however, this layer reached a maximum depth of only 45 cm below the ground surface. That overburden was shoveled off without screening.

Subsequent soil zones were waterscreened, but produced few archeological specimens. The few identifiable artifacts found, furthermore, were of recent manufacture. Their presence demonstrated that at least half of the soil column had accumulated in the second half of this century, witness a plywood board in a deposit 60 cm below surface.

No good evidence of a moat system or fort wall was revealed in Unit 2. The strata did exhibit a gradual downward trend from south (landward) to north (riverward), but this was not enough to suggest human modification. Rather, it is likely a result of natural ridge forming processes. This being the case, further excavation was proposed north (riverside) of Unit 2, and BHT 16 was later excavated.

Unit 3 (Figure 47,52, Plate 1). This 3-m square was

excavated at the upriver end of BHT 7. Extension of the trench to promote better drainage exposed a concentration of brick and mortar in the dense clay at the floor. The use of a probe in the area surrounding BHT 7 showed that this brick scatter was extensive. Thus, Unit 3 was laid out in order to obtain more information on the feature in a controlled fashion. Simultaneously, Unit 4 was excavated adjacent to the north (landside) profile of BHT 7 (See discussion of Unit 4).

Unit 3 was excavated by natural strata, of which there were four distinct layers. The upper three strata all seemed to be of fairly recent origin, as evidenced by the 20th century artifacts in these deposits. The upper two zones consisted of laminated sands and silts which, in the east and west profiles, exhibited ripple marks. Below these was a thick deposit of mottled sandy clay, typical of long-term deposition in front of a levee system (See Appendix B).

At the interface of Stratum 3 with the underlying organic clay zone was a considerable concentration of river-wash debris. Among the litter at the bottom of Stratum 3 were two boot heels, a wooden beam, and a large wooden pole. Association of this rafted material with the upper zone was clear, as evidenced by a distinct soil break at the interface. The mottled sandy clay literally could be peeled away from the dense organic clay below it.

The basal clay zone contained the heavy scatter of brick that prompted excavation of Unit 3. This clay horizon was noted across the site in the initial backhoe trenching and has been interpreted to represent an occupation zone associated with at least the American period fort. Here in Unit 3, however, the clay was of a darker color, owing to a high organic content. This was no doubt a consequence of more intensive use of the area.

Exposure of the interface along its natural contour revealed that the clay layer sloped downward from south (riverward) to north (landward). Brick fragments and mortar could be observed across the entire surface of the stratum, though they were much more numerous in the south (riverside) half of the unit.

The brick rubble was exposed and removed in stages so that the position of each brick fragment could be recorded in place. Thus, a layer of brick was cleared with small tools, photographed, and drawn before it was removed. Lower-lying brick rubble were then exposed and recorded in the same manner.

It would appear that the brick had fallen upon the clay ground surface and then later settled into the deposit. This matrix surrounding the brick scatter was screened for artifacts through quarter-inch mesh. The operation was facilitated by forced water pumped from the river.

Among the artifacts collected from the clay matrix were two rim sherds identified as annular-decorated earthenware, one of which was burned (Plate D-1:g). Noël-Hume (1969:31) notes that such wares enjoyed their greatest popularity in America during the period 1795-1815. No other clearly diagnostic artifacts were found in association with the brick concentration, though several sherds of green glass are typical of bottles used since the 18th century through the early 19th century.

Also worthy of mention are two cut lead bars and two other lead particles. The presence of these items may indicate that bullet casting was practiced in this area. A nail which appears hand-wrought was also collected from below the first layer of brick. Of particular interest, however, was a cast brass scabbard clip (Plate D-1:i) similar to specimens found at Fort Michilimackinac, an 18th century trading post in Michigan (Stone 1974: Figure 170L). Stone (1974:277) attributes rivet style clips such as this to the British occupation of that site.

Excavation of Unit 3 was halted by termination of the field project on October 16, 1981. At that point, the base of the brick deposit had not yet been located, though the incidence of rubble was much diminished 50 cm into the matrix. Over 650 pieces of brick were removed in excavation of this clay zone, of which only three were whole bricks. Approximately half of the total fragmentary brick were less than a fourth brick size.

In closing the site, Unit 3 was lined with plastic. Brick removed from the unit, minus a representative sample, was placed on top of this lining before backfilling.

Unit 4 (Figures 48,53, Plate 2). Much of what has been stated in reference to Unit 3 can be directly applied to the nearby Unit 4. Along with Unit 3, Unit 4 was designed to investigate a heavy concentration of brick rubble encountered in the floor of BHT 7. This particular 3-m square was located adjacent to the north (landward) profile cut of BHT 7, approximately 1 m from the east (upriver) end.

The soil column in Unit 4 was virtually identical to that in Unit 3. Additional minor zones were evident in the upper profiles; however, these do not seem to be of any major consequence. Rather, they appear to be merely the effects of local variability. One notable zone, for example, occurs 25 cm below the surface at the north (landward) edge of the west (downriver) profile. This deposit of laminated sands exhibits a steeply inclined bedding profile. Unconformities such as this typically form through undercutting and slumpage of a horizontally bedded block (Saucier 1981).

The base of the major mottled clay horizon was not as clear cut in Unit 4 as it was in Unit 3. This was attributed to the effects of organic leaching from several tree stumps lying at the interface. Discoloration of the upper zone made it indistinguishable from the lower occupation layer. Nonetheless, differential compaction was evident in several places between the two horizons, and a thin leaf mat separated the strata in much of the test unit.

In addition to the natural organic materials covering the interface, other cultural debris was present at this level. These appeared to be of recent manufacture. Wire nails in some wood pieces indicate that the deposit at least post-dates the 1850s (Nelson 1968). Further, a length of rubber tubing resembling an early automobile tire suggests 20th-century deposition above the interface.

The organic clay layer in Unit 4 sloped downward from south (riverward) to north (landward), as in Unit 3. The brick rubble contained in Unit 4, however, exhibited a higher degree of patterning. In Unit 3, brick fragments seemed randomly distributed, whereas in Unit 4 the brick was heavily concentrated near the edge of BHT 7. There, brick was not only more numerous, but also in larger pieces. Indeed, several whole bricks were still mortared together where they had fallen. From these indications it would seem that the source of the brick fall was immediately south of Unit 4.

Artifacts derived from the cultural zone in Unit 4 again imply deposition during the early 1800s, white earthenware and green bottle glass being present. A triangular iron file and two small caliber bullets were also recovered. One was solid and ridged at the base (.30 cal.) (Plate D-2:g). The other (.38 cal.) is hollow, is not ridged and has been altered by putting a hole in the tip. The opposite end also seems to have been cut (Plate D-2:h).

In addition, a small silver coin was found beneath the second layer of brick removed (Plate D-2:e,f). Although the relief of both sides is badly worn, it appears that the coin is a Spanish half-real piece, dating from the period 1791-1799 (Schilke and Solomon 1964:173). The actual mint date is illegible, but it may be 1799. Again, this find suggests that the deposit derives from the first quarter of the 18th century.

In profile, it was noted that the concentration of cultural material terminates in the upper 20-40 cm of the clay matrix. Though the break is not as clear as in BHT 9, mortar and brick particles become less numerous, and finally absent, deeper into the horizon.

As with Unit 3, this 3-m square was not yet completed when it was backfilled at the close of the field season. The floor was lined with plastic sheeting and the removed bricks placed atop it. A total of 401 fragments were encountered, as well as 6 whole bricks.

Unit 5 (Figure 49). This 2-x 1-m east-west unit was located nearer the water, south of BHT 8. The suggestion of a fort wall passing through BHT 8 prompted this subsequent excavation in the hope of intersecting the extrapolated line. A 20- x 5-m magnetometer reconnaissance was also performed over this area (Figure 11 and Appendix E).

Given its closeness to the riverbank, Unit 5 possessed a shorter soil column above the basal gray clay horizon. From the surface, the uppermost laminated sand layer reached a depth of 40-50 cm. Immediately below this was a deposit of gritty hard-pan. Variable in thickness and not continuous throughout the unit, this lens held a great many recent artifacts, including a light bulb base and a stove part. None of these materials, however, was precisely datable.

Other strata noted in the profiles were not unusual, except for a thin organic layer nearly a meter below the surface. Only 2 cm thick at its maximum, this dark zone may represent a period of stability prior to continuance of disposition.

Most of the artifacts were collected from the hard-pan lens. One whiteware sherd was found in the second major sand zone, immediately above the organic layer. Also found was a small wooden peg that seemed to be driven through the clay zone in the trench floor. Whether this is a fort-related artifact or not is impossible to tell.

Unit 6 (Figure 49). This 2-x 1-m test unit was excavated on a north-south axis to the north (landward) of the on-site datum marker. The unit was placed in this location to determine if the northern site limits had been disturbed by subsequent sand-borrowing activities. It would appear from the soil profile revealed in Unit 6 that here the site integrity has been disturbed considerably.

The soil column in Unit 6 exhibited a series of horizontal beds, reflecting at least 15 separate periods of deposition. These narrow bands were heavy with organic material. The deposits resembled in character those noted in the known borrow pit area of BHT 19. Therefore, despite the fact that no noticeable surface depression is evident in this area, it is probable that this area is a naturally filled borrow pit.

No artifacts were encountered in the excavated soil. Several items, however, were noted in the profiles. These were all of modern manufacture, even to a great depth in the depositional sequence. Notably, a plastic aerosol can top was observed in the second stratum above the unit floor at 170 cm below the ground surface.

Unit 7 (Figure 50). Unit 7 was excavated over a stratigraphic depression appearing in the north profile of BHT 9. This soil feature near the east (upriver) end of that trench contained several cut branches at its base. Unit 7, a 2- x 1-m unit adjacent to the trench cut, was excavated to determine whether these might represent a fascine bundle.

In the excavation of Unit 7 it was found that not only did the strata form an east-west oriented parabola, it also dipped from south (riverward) to north (landward). This fact was especially clear in the west (downriver) profile of the unit.

No materials, except for a modern jar base high in the west profile, were observed in excavation of Unit 7. Thus, a sequence of dates for the soil column is impossible.

Exposure of the branch concentration was a time-consuming effort, made all the more tedious by the gummy clay matrix. The deposit in which the branches lay, incidentally, was covered by a decaying leaf mat. This would imply that the containing soil zone lay open for a period including the fall of the year before it was buried beneath a new deposit.

Interpretation of the branch concentration is not facilitated by any direct evidence. In addition, a more recent root system had disturbed the deposit. Circumstantial evidence, however, tends to suggest that the concentration indeed represents a fascine. Virtually all of the several branch fragments were oriented in the same direction, somewhat west (downriver) of north (landward) on the long axis. Further, one of the branches was clearly cut at an angle; condition of the cut edge indicated that it was ancient (see Plate 3). Finally, the position of the concentration at the base of what seems an unnatural depression was also a relevant consideration.

It is possible, of course, that this concentration was a result of coincidence. Nonetheless, based upon this scant information it seems reasonable to identify the branch concentration as a remnant fascine bundle.

Since the concentration finally was exposed in the last days of the field season, it was left in situ and covered before backfilling. Additional investigation of this and the surrounding area at some later date may produce more conclusive data.

Unit 8 (Figure 50). This 2- x 1-m test unit was located 3 m east (upriver) of BHT 1A and on the same line. Cultural materials having been found in the eastern end of that trench, Unit 8 was excavated in order to determine if those finds were isolated or part of more extensive deposit.

Each of the several soil horizons revealed in Unit 8 were screened separately for artifacts. Nonetheless, few artifacts were found at any level. Nor were those collected of much use in dating any of the strata.

In the dense gray clay layer near the unit floor, a concentration of cinder and slag was encountered. In addition, a piece of green bottle glass was found. Here also was found an apparent wooden stake driven into and through this horizon near the east (upriver) end of the unit. The function of the stake is, of course, impossible to determine given the lack of associated data.

Unit 9 (Figure 51). Unit 9 was excavated in the beach area south (riverward) of BHT 7. The purpose of this test unit was to investigate a location closer to the river in order to determine the feasibility of more extensive work in such proximity to the water. It was thought that, while the depositional overburden would be much less in this area, water table complications might be encountered almost immediately.

Water seepage indeed became a problem at only 70 cm below the surface. Nevertheless, it was possible to inspect the unit adequately with the use of pumps. Further, the basal clay zone was met at 50 cm below the surface. Inspection of the cultural layer, therefore, was not difficult.

Despite demonstrating the ability to overcome such problems, the excavation of Unit 9 produced little significant information on the site. Stratification was quite straightforward. Approximately 10 cm of light sand covered a 40- to 50-cm thick zone of mottled clay and sand, the base of which interfaced with the gray clay zone.

The only exceptional soil zone was noted in the west half of the north (landward) profile. Here an organic sandy zone dipped into the mottled clay and sand deposit. Apparently this resulted from the recent filling of an outwash channel cut by runoff.

The few artifacts recovered from Unit 9 were of recent origin. No fort period materials were noted.

Unit 10 (Figure 51). This 2-x 1-m unit was the farthest east (upriver) of all excavations at the site. The unit was located nearly 40 m farther upriver from Unit 8, the next closest excavation. It was placed in this spot to check for materials outlying the main site area.

Numerous soil zones were reflected in the soil profiles of Unit 10. No less than a dozen narrow horizons were apparent in the 135 cm from surface to floor. For the most part, these zones consisted of loosely-compacted laminated sands, though more compacted clays also occurred.

A layer of dark gray clay occurred one horizon above the floor. Most of the artifacts derived from Unit 10 were collected at this level. Among these were three sherds of annular decorated pearlware, one of green shell-edge pearlware, and six pearlware sherds showing no decoration. These wares can all be attributed to the first quarter of the 19th century, at which time they were most popular (Noel-Hume 1969:128-131). Thus, these deposits are probably contemporary with occupation of the American fort, though they are not clearly associated with the garrison. Rather, they are perhaps more likely to be refuse from a neighboring plantation site.

Results

Archeological testing at Fort St. Leon produced important information on the natural and cultural components of the site. Of particular importance was the confirmation of intact cultural deposits in Units 3 and 4. Of further interest were several soil anomalies located in BHT's 8 and 9 that could possibly represent part of the fort's moat system.

Virtually every deep excavation encountered a dense layer of dark clay, approximately at the prevailing water table. In most places this zone contained cinder fragments and indisputable cultural materials, such as brick and mortar particles. These materials were heavily concentrated in the central site area, diminishing toward the peripheries; organic content of the clay zone was similarly distributed. Apparently both reflect the incidence of cultural activities at the site. Roger T. Saucier (Appendix B) has interpreted this clay zone as a relict ground surface. Furthermore, he states, "This definitely appears on the basis of both lithology and elevation to be the natural levee surface on which the forts were constructed during the middle 18th century and the early 19th century." It would also seem from the position of the zone in each excavation that this former surface generally conforms to the present surface contour. That is, the clay zone appears to rise gently away from the river, level off at the first terrace, and then slope down again from there north (landward). The overburden ranged from .55 m to 2.2 m, with an average depth of approximately 1.2 m.

In Test Units 3 and 4, the archeological significance of this clay zone was abundantly clear. The extensive brick concentration encountered throughout those units seems to be an undisturbed deposit; specifically a brick scatter that has sunk into the old ground surface on which it fell. In addition, some of the earliest appearing artifacts in the collection were derived from among and below these bricks. These artifacts, however, are not adequate for determining the precise origins of this deposit.

The soil anomalies noted in BHTs 8 and 9, on the other hand, are more dubious as significant archeological features. While there is little doubt that they are not of natural origin, there is no evidence to support their antiquity. Lacking artifact associations, these parabolic deposits may indeed represent recent activities.

Examination of BHT 19, although it provided little

information about the various occupations at the site, provided data on local levee building activities. Moreover, it gave evidence of the radical earth moving that has occurred in the project area and thus some indication of site disturbance. The fact that numerous brick fragments were incorporated in this construction implies that at least some of the primary archeological context has been lost.

Finally, the negative evidence obtained from archeological testing merits note. No unequivocal indication of the fort wall or moat system was encountered other than the questionable deposits mentioned above. Thus, either the physical remains have been obliterated or the testing operations merely failed to intersect their positions. Similarly, testing in the batture near the navigation light revealed virtually no evidence of cultural activity whatsoever. A considerable amount of recent disturbance, however, was inferred from the backhoe trenches examined in this area.

The model as presented in the Research Design (Gilmore 1981) has been neither validated nor negated by the test excavations. A cultural zone was encountered, but since physical cultural remains found were not in quantity or definitive, it cannot be said unquestionably that the forts were located, although other parts of the model support the location.

MODEL REFINEMENT AND HYPOTHESES

The testing and additional documentary information have allowed refinements to be made in the models as presented in the Research Design and repeated in this report in the section, The Models. The models remain, however, applicable to the mitigation phase. The hypotheses have been changed in view of the new information and to coincide with an excavation phase.

The precise location of the French fort is still unknown for the following reasons:

1. No definitive artifacts of the French period were found in the test excavations, with the exception of one sherd found in BHT 1A.
2. No modern geographic point has been located that coincides with maps of the French period except an anomaly in the river bank at English Turn Bend which is nebulous at best.
3. Test excavations downriver from the American fort (BHT 12, 13, 14, 15) (Figure 24b) encountered disturbed strata, which it is now known are not only the result of present day disturbance, but also were in the area of borrow pits for the 1912-1913 levee and the 1940-1941 levee (Figure 32).
This does not preclude the possibility that remains may be present below these strata. BHT 21, however, was not in the borrow pit area and encountered no cultural remains.

Several additional arguments have been found for the two forts being at or near the same place. It is known the French fort was on Prevost property (see Historical Background). Prevost property lines and the fort are shown on the Amelot map of 1753 (Figure 5). The length between the lines scales 9888 feet (51.1 arpents), but Prevost owned 76 arpents at the time of his death in 1769. According to this map, the Prevost property line and the fort would be farther upriver. There is reason to believe, however, that Prevost owned from the Plaquemines-Orleans Parish line downriver all of sections 5, 6, and 7. An 1830 survey (Figure 30) records this length as 80 arpents (see Appendix C for details). It is probable that the scale of the Amelot map is not accurate.

Nevertheless, the Amelot map (Figure 5) shows the fort with the identical shape as in the DeBatz 1749 drawing (Figure 3), and the configuration of the river is much the

same as that of the Lafon map of 1813 that pictures the American fort (Figure 9). Superimposition of these two maps matching the configurations of the shore line (Figures 5 and 9) indicates the two forts were in the same place.

A plat made by Lafon in 1805 of the Constance Larch property (Figure 29), which adjoined the Dupard property downriver shows a double line across the property labeled "Veille levee de la Batterie" ("Old levee of the Battery"). This may have been a remnant of the epaulement of the French fort (Figure 3, E). Moreover, it implies the fort was upriver from the Larch property line, since the rear (upriver) epaulement and battery seems not to have been completed.

The foregoing arguments are not conclusive, and since no indications of the French fort were found in the testing phase, the possibility remains that it may have been located on the Larch tract which probably was a part of the Prevost concession.

Testing has indicated, however, that the probability is good that the remains of the American fort were found. This is based principally on the brick scatterings in Units 3 and 4 and the associated artifacts (see Appendix D-1). The brick scatterings did not seem to be in place, and it is possible these may be remains of the wall of the fort, but it seems unlikely that the walls were built of brick in view of the width of the wall, about 1 foot, as shown in the fort profile drawings (Figure 10a). Furthermore, the test trenches in the areas projected to encounter walls contained only isolated brick fragments. Consideration, however, should be given to the probability that bricks were scavenged from the site for reuse, especially since the forts, although protected by levees, were probably exposed to human view, perhaps until the 1890s (Appendix B). Rather than part of the wall, it seems more likely the brick scatterings were part of the powder magazine toward the south (Figure 10).

Although it may be coincidence, there is a relatively close fit in measurement of the parabolic strata in BHT 9 (Figure 37, Plate 3) with the measurement of the ditch surrounding the fort as shown in the profiles of the fort (Figure 10a). The base of the "ditch" on the profiles (Figure 10a) measures 7 yards or 21 feet, whereas the base of the parabolic strata could be from 6 m (19.8 feet) to 7 m (23.1 feet); the depth on the plan is 2 yards and the maximum depth in the trench measures about 5.3 feet. Truncation of the strata filling the ditch, evident on the

profile drawings of the BHT 9 (Figure 37), could account for the missing 0.7 foot. If this is the ditch of the fort, then the topmost section of the walls are also missing. The wall stood 9 feet above the ditch, and the plan (Figure 10a) shows the inside of the occupation level of the fort as the same level as the top of the ditch. The clay stratum containing occupational debris is about 0.8 m (2.64 feet) below that elevation in BHT 7. This in itself would suggest the feature in BHT 9 is not the ditch of the fort, since it is unlikely the occupation level would be below the top of a water filled ditch. On the other hand part of the living surface may have been removed by natural processes or human activity. It is possible the feature represents a canal or ditch perhaps dug in connection with lumbering activities when the Fort St. Leon Plantation was leased for lumber procurement during the early 1900s.

Borrow pits and levee building have disturbed the area (see The Levee System and Appendix B, this report), but since an occupation layer lies on a clay stratum, it is probable that it was not disturbed because clay was not used in levee building. Nevertheless, there is always the chance the clay was disturbed inadvertently. It is possible, however, that there was sand atop the clay during the fort's active period, and if so, it has been disturbed since no other occupational level was discernable in the test excavations.

Hypotheses

- H₁ Physical cultural remains of the American Fort St. Leon lie between BHT 9 and BHT 3, extending landward to within about 50 feet of the present levee and riverward to the mortared brick fragments at the river's bank.
If this is so:
1. Structural remains should be found such as setting trenches or posthole molds for the wall and for structures within the walls.
 2. Portable cultural remains coinciding with the model should be found.
- H₂ The American fort had walls built of masonry.
If this is so:
Setting trenches for brick walls should be encountered, although few bricks may remain because of scavenging of bricks for reuse.
- H₃ Physical cultural remains of the French Fort St. Leon lie in approximately the same area as the American

fort, but extend north (landward) of the present levee and upriver.

If this is so:

1. Structural remains should be encountered such as 6-inch squared posthole molds in the wall area.
2. Portable physical cultural remains of the French time period coinciding with the model should be encountered.
3. Physical cultural remains may be mixed because of the superimposition of the American fort, physical geological processes, and levee building.

H₄ Physical cultural remains of the French Fort St. Leon lie downriver adjacent to the American Fort St. Leon.

If this is so:

1. Structural remains should be encountered such as 6-inch squared posthole molds in the wall area.
2. Portable physical cultural remains of the French time period coinciding with the model should be encountered.

H₅ The personnel of both forts interacted with the civilian population.

If this is so:

Both civilian and military goods should be encountered, although military goods should predominate.

These hypotheses can be tested with archeological excavation as outlined in the plan for mitigation, Appendix A.

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* "HL" refers to Huntington Library, Pasadena, CA.

** "LC" refers to Library of Congress, Washington, DC.

Note: "AN" signifies original document in Archives Nationales, Paris, France.

Most translations were done by Carl Eckberg.

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Appendix A

SITE SIGNIFICANCE AND VALUE

The Forts St. Leon, of the French and American periods were apparently at or near the same location on historic English Turn Bend on the Mississippi River about 14 miles downriver from New Orleans. The bend entered history in 1699 with Bienville's confrontation with an English ship. Because of the sharpness of the curve, sailing vessels might have to halt and wait for a favorable wind. This was a consideration in placing military establishments at the bend. Later this characteristic was no longer important because steam-powered boats did not require wind to maneuver the bend. Nevertheless, throughout the early history of Louisiana into the American Period, the military emplacements at English Turn Bend played a significant role in local, national, and international history for three quarters of a century. Today, unfortunately, it is hardly noted in history books.

Known as the Fort of the Turn, or the North Fort of the Turn until about 1757 when it became known as Fort St. Leon, it guarded the river approaches to New Orleans from enemy attack. It supplied refuge for debarking settlers, and at one time it was the most heavily armed of the forts of southern Louisiana, implying it was regarded as one of the most important. It was designed by Bernard Deverges, a student of Ignace Broutin, the designer of Ursuline Academy and other buildings in New Orleans, in the style of Vauban, the father of military installation design.

Troops stationed at the Turn during the French Period were not always rotated with companies of other forts, but eventually came to be. Many of the military men stationed at Fort St. Leon have descendants living in Louisiana today.

The fort was probably abandoned shortly before the Spaniards came into control of Louisiana in 1769. The defensive importance of the position was again recognized by the Americans who built a fort there in 1809.

The American Fort St. Leon was also significant in its role in guarding the river from enemy approach from the mouth of the Mississippi during the War of 1812. The American plan also used the French design of the curved main battery on the riverside. Although the fort itself was not besieged during the Battle of New Orleans, the troops were constantly on the alert and took part in a losing battle on the west bank. Some of the Louisiana Militia, including a

company of free men of color, were stationed there. No doubt descendants are in the area today.

Personnel during the regime of both forts interacted with the local plantation owners. We know only of the recorded complaints about the soldiers; we do not know of the favorable interactions--so often the case. Remembrances of the forts are recorded in the name of the Fort St. Leon Plantation and the name of the area long known as Fort St. Leon District.

Both forts were built in response to international situations in order to protect the coast and New Orleans. First was the war of the Austrian succession, second the French and Indian War, known as the Seven Years' War in Europe, between France and Great Britain. The latter eventually resulted in the Spanish possession of Louisiana. The American Fort St. Leon was also built in response to the American war with Great Britain.

Information compiled about the site can also be useful in informing the general public as well as the people of Plaquemines Parish about the role the two forts had in local and international politics and intrigue. This could take several forms, for example, museum displays, dioramas depicting the life at the two forts, and/or on-site displays.

Some of the site has archeological integrity and value, although parts of the area have been disturbed. The unmistakable evidence of this site was revealed in Units 3 and 4 near the end of the field season. The areal extent and depth of these cultural deposits is yet unknown. Backhoe trenching, however, indicates that the dense clay matrix, interpreted as a relict ground surface, is present across the project area. Further, cultural materials occur elsewhere in this matrix, generally declining in frequency with distance from Units 3 and 4. This would argue that those excavation units are located in part of the most intensely occupied area of the site.

Although no clear evidence of the early French occupation was noted, it would seem that a sizeable 19th century site is indicated by the archeological remains. Moreover, testing suggests that more substantial remains than those observed may have survived. The data collected, however, do not allow any conclusive statement concerning site function. Artifact associations, though they are clearly of the American period, fail to differentiate between the known military and civilian populations; both

could be represented at either a military or civilian establishment as suggested by the models.

Despite the limits imposed upon interpretations by the present data, the fact that in situ archeological remains were verified by the testing program establishes the potential for significant anthropological research. Through more intensive excavation, based upon the results of testing, formulated hypotheses may be addressed at the site. It is clear, however, that any attempt to undertake further investigations in the project area will require a concerted effort to control groundwater flooding of the excavations. Without such controls, complete and accurate data recovery would be impossible.

This site is highly significant, not only for its historic importance, but also for the interaction and effect the forts had on the individuals, both military and civilian, connected with them, and in addition for its value as an educational mechanism.

Appendix B

GEOMORPHOLOGICAL AND SEDIMENTOLOGICAL FACTORS INVOLVED IN THE INVESTIGATIONS AT ENGLISH TURN, MISSISSIPPI RIVER, LOUISIANA

by

Roger T. Saucier

Introduction

At the request of Mr. Tommy Ryan, Archeologist in the Planning Division, U.S. Army Engineer District, New Orleans, two visits were made to the project area at English Turn during the summer and fall of 1981. The purposes of the visits were to meet with contractor field personnel (Institute of Applied Sciences, North Texas State University), discuss with them aspects of site area geological development and evolution, and examine site excavations with regard to clues to site landscape changes since the mid 18th century. Excavation profiles were also examined after the field work was completed.

This report summarizes opinions and observations based on prior studies of the geologic and geomorphic history of the region and the site visits. It represents an independent or outside opinion on certain key questions or issues related to site evolution in that the writer was not involved in the archeological interpretations of the excavations or artifacts nor in the collection or analysis of historic documents.

Geologic History of the Site Area

Geologically, the nearsurface sediments and landforms of the English Turn area are extremely young. They are all of Mississippi River origin and represent deltaic deposition in a variety of specific environments such as estuarine, swamp, natural levee, and distributary channel (Saucier 1963). All sediments are fine grained in that no particle sizes coarser than sand are present and all sedimentary units contain appreciable amounts of organic matter (Kolb 1962).

As in all deltaic situations, both erosion and deposition are active and any given area may undergo repeated cycles of land loss and land formation. These

processes affect areas in cycles that may take hundreds to thousands of years and also cycles that may be nearly yearly occurrences. The latter are especially important near the active river channels where seasonal stage/discharge fluctuations occur. Both types of cycles are presently influencing the English Turn area.

The geologic history of the area can be understood with consideration of a series of events dating back to the Mid-Wisconsinan Stage of the Pleistocene Epoch. At that time, estimated to be about 35,000 to 40,000 years ago, the site area was characterized by a nearshore marine environment similar to that which now exists within a few tens of miles of the Gulf Coast. With onset of the Late Wisconsinan glaciation, sea level fell and the seafloor was exposed to subaerial weathering and erosion. During the 10,000 or more years that sea level was lowered, this land surface became a typical Coastal Plain landscape of low rolling terrain and well-oxidized and consolidated soils. At English Turn, this weathered land surface now exists at a depth of about 27.5 m (24.4 m below mean sea level (MSL)) as indicated by borings made in the general vicinity (Kolb 1962; Kolb et al. 1975).

As a post-glacial sea level rose above this elevation, a nearshore marine environment once again prevailed in the area. This condition probably began about 10,000 years ago, but did not last very long. By about 6,000 years ago, the Mississippi River began introducing the first Holocene fluvial sediments into the region; by about 5,000 years ago, the shallow marine environment was transformed into a deltaic plain similar to that which prevails today in south Louisiana (Frazier 1967). As in the case of all delta lobes, active sedimentation lasted a few hundred years and then the locus of deposition shifted elsewhere. When sedimentation declined, distributary ridges flanked by fresh- to brackish-water swamps and marshes gave way to expanding brackish and saline marshes, expanding lakes, and subsiding natural levee ridges flanking abandoned distributaries.

By 3,000 years ago, a second delta lobe began influencing the English Turn area. This lobe, a part of the St. Bernard Subdelta (Saucier 1963), included a distributary channel that trended east-west through the approximate location of Fort St. Leon. Whereas distributaries from earlier delta lobes are either now buried or destroyed by erosion, the St. Bernard Subdelta distributary is still visible. Just west of the fort location, its presence is evidenced by the now well-subsided but still apparent

natural levees flanking a channel named Unknown Bayou. While this Unknown Bayou distributary was active, it continued several tens of miles farther eastward along the present course of Bayou La Loutre, and its period of greatest discharge is estimated at between 2,200 and 2,500 years ago. This abandoned Mississippi River distributary had a direct influence on the landscape at the Fort St. Leon site in two distinct ways as is discussed later.

After 2,000 years ago, the St. Bernard Subdelta was abandoned and active river disposition did not return to the English Turn area until about 1,200 years ago. When it did, it was in the form of the distributary channel that was to become the main course of the Mississippi River south of New Orleans. Apparently, when this most recent distributary was becoming established, the Unknown Bayou channel was still an influential topographic feature or landform. Geologic evidence suggests that the later channel encountered and occupied a segment of the Unknown Bayou course; however, it did so for only about 6.5 km and in this segment the direction of flow was reversed. Consequently, the present Mississippi River between river miles 78 and 82 AHP (Above Head of Passes), where the river flows from east to west, is a reoccupation of the older channel wherein the original flow was from west to east.

Since 1,200 years ago, the Mississippi River channel in the English Turn area has increased from a distributary to the trunk channel carrying the total river discharge. The maximum discharge was not realized until in historic times for it was only then that other distributaries such as Bayous Lafourche and Plaquemine were artificially closed off. More recently, during the 20th century, flow has once again declined because of increased flow being diverted by the Atchafalaya River. As the river channel south of New Orleans enlarged, it built its natural levees progressively higher and wider while the channel migrated laterally only a very small amount. In the Fort St. Leon area, the natural levees of the present river channel directly overlie those of the Unknown Bayou distributary. This has not produced higher natural levees along the present river, but it has resulted in a greater total thickness of these firmer and more erosion-resistant deposits.

Evolution of the Site Area Landscape

In discussion with the archeological contractor and visits to the English Turn area, it became apparent that there were three main questions or issues relating to the

geomorphic history of the area that needed resolution in order to understand the human occupation of the site. These are:

- (a) Identification in the excavations of the historic (i.e., 18th century) land surface on which the Colonial and American period forts were built.
- (b) Determining, at least qualitatively, the amount of lateral river migration and bank recession at the site since the 18th century.
- (c) Explaining the origin and age of the uppermost silty fine sand deposits that blanket the site area.

Elements of the geologic history of the area previously discussed have direct bearing on the first two questions. Also involved is the matter of the amount of regional subsidence that has influenced the area. Each of these issues is discussed below in terms of what is known about the natural processes at work in the region and what changes have been introduced by man.

Historic Land Surface

Prior to the construction of artificial levees in the English Turn area, the land immediately adjacent to the north (right descending) bank of the Mississippi River would have consisted of a forested natural levee (Saucier 1963). Being on the concave side of a bend, the bank would have been moderately steep with deep water close to shore. Typical natural levee deposits consisting of oxidized, brown and gray, firm to stiff silty clays (Saucier 1963; Kolb 1962) would have been exposed in the bank and would have formed the very gently sloping levee surface extending away from the river for several hundred meters. These clayey deposits, typically having little or no internal structure or laminations because of biogenic reworking, would have extended from the top of bank at least to the lowest water level in the river. Because the natural levee would have been slowly aggrading through the addition of new sediments during floods, an organic-rich "A" soil horizon would not be well developed.

The highest natural levee elevations would have been present within several meters of the river bank. While the writer is not aware of any detailed topographic surveys for the English Turn area in which absolute elevations are given, the USGS quadrangles suggest the highest elevations were on the order of 1.5 to 2.1 m above MSL. Not more than

1 m of local variation would be expected. These elevations are in agreement with occasional ground level spot elevations on various surveys showing artificial levee alignments in the area.

The backhoe trenches and excavations made at the Fort St. Leon site by the archeological contractor revealed a rather persistent zone of blue, gray, or mottled clay or silty clay located below an elevation averaging 1.5 m above MSL and ranging from 0.9 to 2.0 m above MSL. This definitely appears on the basis of both lithology and elevation to be the natural levee surface on which the forts were constructed during the middle 18th century and the early 19th century.

According to a reference cited by Gilmore (1981:13), the ground at English Turn in 1747 was described as being 9.6 feet (9.0 French feet) (2.93 m) above low water. Low water is assumed to be no lower than mean sea level. This elevation is several feet higher than the writer would expect, but within reasonable range considering accuracy of surveys and allowing for the effects of subsidence. Subsidence in south Louisiana, including such processes as regional tectonics, sediment consolidation, faulting, and sea level rise, has been calculated to be 118 mm per century for the Pontchartrain Basin area north of New Orleans (Saucier 1963) and 238 mm per century for the deltaic plain area to the south of English Turn (Kolb and Van Lopik 1958). Assuming the subsidence rate at English Turn to be between these two values, the ground surface in this area should now be about 0.3 to 0.5 m lower than it was in the mid 18th century.

Bank Recession

Geological mapping of alluvial deposits and their environments of deposition in the English Turn area (Kolb 1962; Kolb et al. 1975) indicate that since the Mississippi River has occupied its present course, the English Turn Bend has migrated toward the northwest a maximum distance of about 1070 m. This is based on the extent of point bar deposits on Shingle Point (across the river from the Fort St. Leon site) as determined by borings.

Assuming that the river has occupied this course for about 1,200 years, this would indicate an average rate of bank recession in the Fort St. Leon area of about 0.9 m per year. This is a relatively low rate of river migration for the Mississippi River, even in this part of the alluvial

valley/deltaic plain. The low rate is basically attributable to two factors. One factor is the reoccupation of the Unknown Bayou distributary and the consequent presence in the upper bank areas of an atypically large amount of relatively erosion-resistant natural levee deposits. The other factor is that the river in the English Turn Bend, being 36 to 43 m deep, is well entrenched into the highly erosion-resistant Pleistocene deposits lying below the weathered horizon of Mid-Wisconsinan age (Kolb 1962).

A knowledge of alluvial processes and area geologic history dictates that one cannot assume a constant rate of bank recession for the English Turn area; hence, the average rate of 0.9 m year is misleading and inappropriate. It is reasonable to expect that perhaps half of the total amount of lateral channel migration took place during the first several hundred years of occupation of the channel. After this time, and especially when the influence of entrenchment into the Pleistocene deposits became significant, the rate of migration was perhaps as low as 0.3 to 0.45 m per year. While discharge in the river channel continued to increase until the 19th and even early 20th century, this does not necessarily mean the rate of lateral migration increased. The increased discharge could have been accommodated in large part by channel deepening rather than an increase in channel width or rate of movement. Thus, a bank recession rate of about 0.3 m per year or less could have prevailed until the early part of this century.

For several reasons, the rate of bank recession in the English Turn area should have increased during this century and may be at the highest rate of the last several centuries. One reason is that annual flood stages and floodflow velocities increased due to development of totally effective artificial levee systems. While this influence has declined during the last several decades due to increased diversion of flow from the lower Mississippi River by the Atchafalaya River, this very event is probably having the same net effect, but due to a different reason. This reason is that declined flows or discharges have led to channel shoaling which, in turn, has probably contributed to channel widening. Thus, there is the situation where, within certain limits or thresholds, either increases or decreases in discharge could produce the same effect.

The final reason for increased rates of bank recession involves the very significant amount of wave wash and near-bank current surges or pulses caused by ship traffic. One need only examine the morphology of the present river

banks to appreciate the magnitude of this process. Therefore, there is probably some correlation between bank erosion and the trends of waterborne commerce along the lower Mississippi River.

The above discussion of bank recession is quite subjective and qualitative; however, it does suggest that as much as 60 to 75 m of recession has occurred at the Fort St. Leon site since the mid 18th century. The writer feels that recession of this magnitude is consistent with the history of artificial levee setbacks at the site and also the several concepts regarding the precise locations of the Colonial and American period fortifications (Gilmore 1981).

Plans and profiles from maps of record for both forts show the principal earthwork and masonry elements to have been set back at least several meters from the actual lower water line (Figures 1, 8). Indeed it is logical that the outermost elements, especially the outer wall of the American period fort, were built along or slightly back from the top of bank. The writer believes that prior to the later 19th century, the top of bank and low water line were much closer together than they now are. Rather than 45 m more apart as they are now, they probably averaged 15 m or less apart when the forts were constructed. Hence, most of the calculated bank recession is manifested in the area above the low water level of the river.

An implication of this view is that there has been little or no lateral movement of the remnants of the outer masonry wall of the American period fort. The presently observable brick clusters probably collapsed vertically downward as they were progressively undermined by erosion and are within a few feet of their original horizontal-plane location. Consequently, these clusters are valid fixed points on which to position and orient plans of the fort. Further, the sequence of alluvial deposits underlying the site are not of the type that would be conducive to slump block- or rotational slide-type bank failures that could lead to lateral displacements at the surface.

Recent Fluvial Deposits

As discussed previously, the mid 18th century natural levee surface on which the Colonial period fort was built (as well as the later American period fort) is a distinctive and persistent horizon in site excavations. However, the 0.9 to 1.1 m of more recent river deposits overlying this horizon reflect a short but complex history of river

activity as strongly influenced by levee construction and perhaps also sand mining or borrowing activities near the site.

Before discussing the probable origin and chronology of these deposits, it is important to mention a significant change in Mississippi River behavior during the historic period in question. This change is a marked increase, on the order of 1.2 to 1.5 m, in the height of the annual flood stages on the river in the New Orleans area which gradually took place between about 1880 and 1910 (Mississippi River Commission, 1961). As mentioned, this stage increase was primarily due to artificial levee construction but may also reflect a short-term climatic trend. Irregardless, this increase in flood levels meant that the river battures (i.e., the areas between the artificial levees and the river) experienced the deposition of sediments of coarser grain size and to higher levels and at more rapid rates than previously. In essence, this is the explanation for batture-area elevations of 2.4 to 3.0 m above MSL--some 1.2 to 1.5 m higher than the area immediately adjacent where protected by the artificial levee.

One of the earliest maps of the Fort St. Leon area (Figure 3) shows the planned fort tied into a levee extending both upriver and downriver. Hence, from its earliest days, it was essentially protected from overbank flooding. The precise location of this levee in terms of present areal features is not known, but it is reasonable to infer that it closely approximated the trend of the present low water line (edge of channel cut according to Figure 1 in Gilmore 1981). Later maps, dating through the period 1809 to 1817, similarly show a levee tied into the front side of the later American period fort.

When the levee alignment mentioned above was abandoned in favor of one farther landward is not known with certainty. Maps of 1878 and 1884 by the Mississippi River Commission (Figures 15, 16) show that the road along the river was located on the land side of the fort by this time. However, it cannot be determined whether or not the road followed the landside toe of a levee as is so typical of later times since no levee is actually shown on these maps. Unless bank erosion had progressed to a point where the existing levee was threatened, there would not have been any need for levee relocation or enlargement in this area during the decades of 1860s, 1870s, or early 1880s. Maximum flood levels remained constant on the river during this period.

It is therefore quite possible that the first levee

setback from the original 18th century location did not take place until 1892-1893. Construction of a new levee, no doubt prompted by unprecedented floods on the river during these two years, is well documented and apparently was in the location of what was to become the 1912 enlargement. In the Fort St. Leon area, this alignment is parallel to and about 18 to 20 m landward of the line of backhoe trenches. This meant that the fort for the first time was on the river side of the levee; however, a map of 1894 distinctly indicates that the old levee was left intact. This is significant in two respects. First, it means that it was not until some years later when the older levee in front of the fort finally deteriorated that river sediments could have been deposited in or around the fort. Second, it means that there would not have been a source of fill for levee construction in the immediate area of the fort unless it was the natural levee deposits on which the fort was built. While the natural levee deposits could have been used, there is no evidence from excavation in the site area that they were. Consequently, the fill must have been obtained from an area either upstream or downstream from the fort or, considerably less likely, from within the river just off the bank.

The presence of a levee in front of the fort until some time after 1894 should be kept in mind when interpreting the soils stratigraphy of the site as well as the artifact assemblage. It suggests that remains of either or both forts were readily accessible to man and subjected to subaerial weathering and erosion for a long period of time. The ruins could have been frequented by collectors/visitors from nearby plantations; they could have been influenced by construction activities in the area; and/or they could have been covered by dense vegetation. Earthen embankments would have eroded and moats would have filled with sediment and organic debris. The latter may explain the organic-rich horizons that were found in the backhoe trenches to overlie the natural levee surface.

In 1894, the old levee was indicated as being almost on the river bank. It is surmised that it became breached by about 1900 (perhaps during an unusually severe flood in 1897) and hence began the deposition of a series of layers of silt, silty clay, and clay in the fort area. Several centimeters to a decimeter or so of sediment could have been deposited during a single flood. Each layer would have irregularities caused by scouring and filling around trees, logs, and debris and by surface erosion during the months or years between floods. Incorporated in each layer would be a wide range of floatable debris representing anything that

could have washed into or been thrown into the river upstream.

In 1912-1913, a significant enlargement of the 1892-1893 levee was made in the vicinity of the fort site. Remnants of this levee are still visible today. Although there is little more than intuition to go on, the writer feels that this construction activity involved widespread and unprecedented disturbance in the site area. The year 1912 witnessed one of the highest floods on record in the New Orleans area. This probably in part was influential in the new enlargement being of considerable height. Hence, a need for relatively large volumes of fill. If any of the pre-1892-1893 levee remained, no doubt it was used for borrow. However, most material certainly would have been taken from shallow pits. A map of the area made by the Mississippi River Commission in 1921 indicates continuous borrow pits between the levee and the river. While the map is of such a small scale as to preclude precise location of the pits, it is apparent that they must have been located riverward of the line of backhoe trenches or, more probably, were in the area of the trenches but so shallow as to not have involved any excavation below the 18th century natural levee surface. In other words, the pits may have been only areas in which the post-1900 alluvium was scraped by bulldozer or dragline operations.

If this was the mode of excavation, it is likely that any features of either fort that were either projections above or depressions into the old natural levee ground surface were levelled or filled. It is further possible that the entire batture area was graded or at least exposed to enough construction equipment operation as to create extensive destruction of existing features.

The final levee setback was made in 1941 to the location of the present levee. It is unlikely that this construction episode resulted in any significant disturbance of the site since the borrow areas were located landward of the 1912 levee. Whether the 1912 levee was degraded and used for fill for the new levee or left to degrade naturally is not known, although the former is more probable.

The uppermost layer of alluvial sediment in the site area is a widespread 0.3- to 0.6-m thick deposit of tan to light brown silty fine sand or sandy silt loam. It is highly lenticular in internal structure with intricate bedding indicative of deposition in flowing water. This bedding suggests deposition in an area free of vegetation and the entire layer appears to represent a single flood

episode on the river. There are two floods of record that would appear to have been capable of laying down such a layer--one in 1927 and one in 1973. Artifacts recovered from within and beneath this layer do not appear to be indicative in this situation. However, this writer is of the opinion that the layer dates from 1927 because aerial photos do not indicate the area to have been clear of vegetation (i.e., trees and large shrubs) in 1973. On the other hand, the area could still have been unforested in 1927 as a result of levee construction activities in 1912.

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Appendix C

EXAMINATION OF AERIAL PHOTOGRAPHS AND ARCHIVAL MAPS OF THE FORT ST. LEON AREA, 16PL35, PLAQUEMINES PARISH, LOUISIANA

by

Bonnie C. Yates

Aerial photographs were studied to address the following issues: subsurface indications of the forts at English Turn, effects of sand-borrowing activities and levee construction, demarcation of property lines, displacement of river brick wall remnants, and placement of the French fort relative to project hypotheses. Aerial photographs were compared with historical maps and documents obtained for the project. The aerial photographs and modern maps were provided by various agencies such as the Corps of Engineers (New Orleans District), U.S. Geological Survey (USGS), and the National Archives. These maps and documents are the subject of this appendix and are listed in Tables 2 and 3 in chronological order for reference with the text.

Materials and Methods

Several aerial photographs were acquired before the 1981 archeological field season and were studied for orientation to the terrain, relative site location, and feature positions. Additional photos were ordered from the National Archives for post-testing phase analyses. These aerial photographs also facilitated drafting of Figure 32 and provided crosscheck measurements of the levees and distances between landmarks.

The quality of the photos varies substantially, and the ratio scales are relatively small, ranging from 1:2,000 to 1:50,000. One print per decade was chosen to be scaled to 1:24,000 for overlay comparison with the 1972 USGS Chalmette Quadrangle (Figure C-1), which was used as a base to determine ground distances (after Lyons and Avery 1977). Prints were examined with the aid of mirror stereoscopes (Model F71E, distributed by Air Photo Supply), Hubbard folding stereoscopes, Ridgway proportional dividers, and related equipment. Scaled reproductions and enlargements were prepared using high contrast and continuous tone photographic techniques. No vertical photography was generated by this project. Because the site area has

experienced repeated surface alterations by the action of river current, wave wake, scouring, flooding, levee construction, and sand borrowing, as well as agriculture and fortification, existing aerial photographs were considered adequate and helpful in determining the extent of these alterations at the site.

Results and Discussion

Enlargements of color infrared aerial photographs were used in conjunction with the other prints to examine the natural setting of the site area. The high contrast of black and white enlargement allows differentiation of agricultural plots and orchards from marshland vegetation. Identity of the specific types of plants or crops at this scale, however, requires expert evaluation (Morain 1974).

Ground checks indicated that the floor of the site area underneath the leaf litter is sandy with dark pockets of sandy loam where concentrated vegetation is decomposing. The list of identified vegetation (Table 1) includes cottonwood and willows, which can be detected along the edges of the constantly moist borrow pits. Cypress stumps at river's edge (ground identified prior to aerial photograph examination) are also seen in the large-scale shots.

Another feature, the 1941 borrow pit, is visible on most of the photos, whereas it is obscured by jungle-like growth when surveyed at ground level. Rises and depressions are discernable on the ground, but contiguity and extent of features such as levees, borrow pits, swales, and ridges are more distinct from the air (Tator 1951).

Traces of the borrow pits for the 1912 levee construction are visible as water-holding depressions, but the pits are not continuous; furthermore, measurements suggest that these depressions were identified by Corps engineers as the 1912 borrow pits on levee surveys of 1945. These surveys were based on aerial photographs.

Unfortunately, there is no indication of the ditch or moat that is described as surrounding either fort. Many factors contribute to masking the evidence of a former ditch. Its proximity to a dynamic river with seasonal flooding and scouring could quickly result in filling an abandoned ditch, to the extent that 200 years later, vegetation would not differentially grow in that subterranean feature as it often does in Britain where

vegetation marks and soil stains reveal ancient castles and forts (Wilson 1975). Furthermore, borrowing activities probably graded the area from time to time.

Some type of levee improvement is suggested in the 1965 aerial photograph by a crisply defined white band at the toe of the levee extending from the catwalk near English Turn Light to the elbow of the turn. When the site area is shown at low river, flotsam debris is readily apparent. The 1941 borrow pits in the 1943 photo (Figure C-2) are full of water, with jammed-up logs in certain areas.

A singular print from 1954 (Figure C-3) is dated January and therefore was flown when the river was low. On it, a bank line is exposed that could be a vestige of any of the pre-1892 levees near where the forts were constructed. The bricks are probably exposed as well, but indistinct on this print.

Private sand borrowing activities were not prohibited before 1966. The ground surface between the bank and the rise of a borrow pit as seen on the 1966 aerial photograph (Figure C-4) reveals that an episode of minimal regrowth has occurred. Vegetation is sparse and appears immature as would be the case after surficial disturbance of this kind.

Also visible on the aerial photographs are linear vegetation features that demarcate the plantation crop plots. These occur on both sides of the levee in the old fortified area, which may extend inland past the levee and perhaps across the far side of the modern road. The small-scale aerial photographs provide a view of a larger area, enabling identification of agricultural plots, roads, and canals by comparing their configurations with details from archival maps. For example, rectangular vegetation patches are aligned roughly perpendicular to the curving shoreline. They measure approximately 75-160 feet in width and 650-1100 feet in length on the 1933 air photo (Figure C-5), and these measurements correspond to width and length of rectangular features on many of the late 19th century maps of the Turn (cf. Figures 15 and 16). Sitterson (1953) described sugar plantations in Louisiana as being divided into "rectangular lots of about four acres each," which were further divided by shallow drains into 2-acre lots. The plots in the 1933 print measure a little more than 1 acre to as much as 4 acres; many of the 4-acre lots are divided by cross ditches into 2-acre lots fitting descriptions by Sitterson.

Maps from the later 1800s suggest that surveyors and

cartographers spent effort in measuring these plots and recording their angular adjustments if the property curved around the bend. In many places, relative position on one map could be located on another map by counting plots within sets whose drainage lines ran parallel to each other. Drainage lines are manifested on aerial photographs as contrasting tones of hydrophytic vegetation that thrives in shallow moisture-holding swales. They are clearly recognizable on all of the photos, and the major divisions or sets of plots form patterns that help determine locations of adjoining plantations indicated on the archival maps.

Faint traces of a road leading from the elbow of the Turn to a region called Cutoff, 10 miles upriver from Twelve Mile Point, are visible in some of the prints. Crossing overland to New Orleans at English Turn was much preferable to travelers going upriver than waiting for favorable winds to sail them around the bend. The first map to show Cutoff Road labeled is D.C. Houston's 1863 map (Figure 14). It reveals how the road may have served as one of the ways to reach New Orleans from the Turn as early as 1774 when du Pratz wrote that ship passengers who wished to hurry on to the city "disembarked here and finished the journey by land" (Le Page du Pratz 1774); however, du Pratz never mentioned the road by name.

Identification of this road on aerial photographs allowed ground checking the location of the American fort. The road is the key landmark still existing near the site that appears on archival maps showing, in some cases, scaled distances from the road to other features (e.g., property lines and brick wall remnants). The road bearing west where the river turns sharply south is the likely candidate for the 1863 Cutoff Road, based on measurements from early 20th century documents and maps on which it is labeled. It may also have been the road mentioned by du Pratz, but another contender for that road (1774 Cutoff Road) exists as either one of a pair of modern roads visible in photographs as parallel roads heading northeast from the Turn. This latter assessment is based on the presence of a road on the DeBatz 1749 plan (Figure 3), which is shown bearing northwest from the downriver barrette of the French fort. A scaled transparency of the DeBatz plan placed over the 1972 Chalmette Quadrangle shows how the road on the DeBatz plan may be superimposed over either one of the modern roads (Figure 6).

The visibility of the roads on the aerial photographs is partially attributable to methods of early highway construction in the New Orleans area and the practice of

reuse. Miller-Surrey (1916:93) cites documents from the Paris Archives that describe these semi-public 18th century roads, which

...ran back from the river and lay between the different allotments of land. They were laid out, constructed and kept up at the expense of the men whose land lay on either side and by such persons who derived benefit from them. They were narrower than the public highways, though built in the same way with a ditch on either side of the road itself.

Newton and Raphael (1971) give three traits of relic roads in Louisiana: (1) they are entrenched or sunken, (2) they are associated with a particular vegetation complex, and (3) they tend to occur alongside current routes. Entrenchment results from traffic which causes ruts that are eventually flattened by traffic seeking the higher ridges of the ruts, breaking the ruts down, thus eventually lowering the entire road. The vegetation is usually scrubby trees, herbs, and grasses, and from the air, appears lighter in tone, contrasting with the darker marshland. In some cases, old roads appear flanked by even darker vegetation, which in many places, indicates thicker vegetation in moisture-holding drainage ditches. Both roads considered as possibly serving as Cutoff Road have evidence of reuse. The road extending from the downriver batture shown on the DeBatz plan may be the same as the modern road that passes by the Belle Chasse State School today. The road identified from Houston's map appears to have been long abandoned in the 1954 and 1965 prints, but looks cleared as far as Planter's Canal on the 1978 photo (Figure C-6).

Roads conveniently serve as property boundaries; but in high-intensity agricultural areas, fence rows and the edges of fields are often used to demarcate cadastral limits (Osterhoudt 1965). The township and range maps of 1830 (Figure 30) and 1853 (not figured) were very helpful in locating, on aerial photographs, hedgerows that might indicate former property lines. These maps included tables giving frontage measurements of each owner's section and the angle of the property limit lines; furthermore, the 1853 map notes the location of Fort St. Leon "in ruins" on the upriver side of the lower limit of Section 6.

Unfortunately, neither township and range map provided a scale; however, the property lines remained unchanged on the 1939 and 1972 USGS Chalmette Quadrangles, as well as on a 1935 levee survey of the Turn and the 1942 St. Bernard 15'

Quadrangle (not figured). From these, a scale was calculated for the earlier township and range maps. A transparency was drawn outlining these property lines to facilitate locating them on aerial photographs scaled to the 1972 Chalmette Quadrangle. This was done in order to determine the ground location of the J. Dupard lower property line where the American fort was built. The lower limit of Section 6 can be identified on all aerial photographs as the first hedgerow on the landward side of the levee, downriver from the brick wall feature in the river (Figure C-7).

The archival descriptions of each parcel at the time of sale was compared by measuring the section frontages on the township and range maps, topographical maps, and aerial photographs. Some notable discrepancies occur other than expected scaling aberrations. For example, the 1769 inheritance of the Prevost concession recorded "...seventy-six arpents front on the river with usual depth" from below Twelve Mile Point, 5 leagues from New Orleans (Shenkel et al. 1978). Measuring this distance on topographical maps along the shore from the lower limit of Section 4 (i.e., Orleans/Plaquemines Parish line just below Twelve Mile Point) places the downriver property line of the Prevost heirs at the lower limit of Section 6, which is the same as the lower limit of the property purchased from them by J. Dupard and in his ownership until 1823. Notarial records also indicate that Juan Pueche bought 8 arpents adjacent to Dupard in 1805 from Prevost's heirs (Pedesclaux 1805); these two tracts approximate the dimensions of Section 6. Section 7 is shown on the township maps as belonging to Constance Larch, who had purchased it from the heir of J.B. Aury (Pollock 1822). Aury is recorded as buying 8 arpents from Salomon Prevost (Rodriguez 1787) adjacent and downriver to the J. Dupard tract. Section 7, however, measures 10 arpents (1,918 feet) in frontage and is downriver from Prevost's 76-arpent concession as measured from the Parish Line.

To resolve these discrepancies, various methods of measuring Prevost's 76 arpents were tried, using a rendition of the 1853 township and range map (Figure C-8). Method A follows the shoreline from the lower limit of Section 4 to the lower limit of Section 6 in a manner most similar to surveying techniques of the 18th century (e.g., horse-drawn chains following a roadway). Method B is a line drawn straight across from the lower limit of Section 4 to the lower limit of Section 6. Methods C, D, and E start at either the upper or lower limit of Section 4 and measure downstream to points that correspond with downstream section

lines. It was hoped that these alternative methods would provide evidence of Prevost's ownership of Sections 7 and/or 8. These last three methods are too contrived to substantiate this evidence conclusively. Therefore by using either Method A or B, the inherited Prevost concession is established between cadastral limits shown on later township and range maps as Sections 5 and 6. Prevost, Villere (who bought out J. Dupard), and Larch are shown on Figure 30 as claimants of Sections 5, 6, and 7, respectively, moving downriver from Twelve Mile Point and the Orleans/Plaquemines Parish Line.

The establishment of the Dupard line at the lower limit of Section 6, however, does not shed light on how the heirs of Jean-Baptiste Prevost could sell to Aury the 8 arpents of land that is one section downriver from their 76-arpent inheritance, as measured herein. Consideration must be given to the possibility that the Prevost heirs purchased adjacent land between Prevost's death in 1769 and the sale to Aury in 1775 or that it was already owned by Salomon and his brother prior to 1769.

The discrepancy of the frontage measurement of the Larche tract was solved by comparing the township and range maps with the USGS Chalmette Quadrangles. The 1972 USGS topographical map (Figure C-1) showed the red dashed section lines of Sections 7 and 8 extending into the river channel. The distance between the ends of the section lines in the water closely approximates the documented 8-arpent frontage of the Larche property as sketched by Lafon in 1805 (Figure 29). The cutting of the river, therefore, has taken away land and yet widened the frontage of Section 7 by 254 feet. The frontage measurements of Sections 5 and 6 on the USGS Chalmette Quadrangle (1972) and the township and range maps compare more favorably because of less cutting along their frontages. The levee surveys of 1935 (not figured) and 1945 (Figure C-9) show the bank lines as early as 1895. By superimposing these surveys over the township and range maps and the topographical maps, more loss of frontage along Section 7 than along Sections 5 or 6 is indicated.

To determine how much bank recession has occurred since the 1830 survey, measurements were made of the distance from the end of each section line to the shoreline as indicated on the Chalmette Quadrangle (1972). The lower limit of Section 5 shows little or no reduction; the lower limit of Section 6 has lost 100 feet; the lower limit of Section 7 has lost 450 feet; and the lower limit of Section 8 shows 620 feet lost to bank recession. These rather crude measurements fit Saucier's estimations of 200-250 feet

(60-70 m) since the mid 1800s (Appendix B). Furthermore, these results reveal a differential loss of frontage along the inner curve of English Turn and allow a more precise determination of where and to what extent bank recession occurred relative to the American fort site.

Remnants of brick walls assumed to be ruins of the American fort are identified in or near the water in two of the aerial photo sets, 1943 and 1966 (Figures C-2 and C-4). Seasonal fluctuations in river level renders these prints unsuitable for measuring the distance between the brick wall remnants and the bankline because aerial photographs record the river level at one point in time. On the 1966 print, however, the bricks measure approximately 120 feet from a recognizable contour on the exposed bank at that time. Using the lowest contour line on the project map (Figure 24a) as the modern bank and using measurements from the 1817 plan of the American fort (Figure 10), bank recession can be estimated. We know from Figure 10a that the brick rampart was approximately 48 feet from the water's edge. The bricks are now approximately 60 feet from the lowest contour as shown in Figure 13, resulting in a loss of about 100 feet since 1817. These computations agree with estimates of bank recession at the lower limit of Section 6 as previously mentioned.

Enlargements were made of the aerial photographs and examined for evidence of displacement of the bricks as a result of river action. Some evidence of shifts in orientation of sections of the rampart is apparent. Nonetheless, on the aerial photographs, the brick features lie within the lower limit of Section 6, i.e., upriver from a line extending from the hedgerow identified as the Dupard line.

In addition, the 1853 township and range map places the old fort in Section 6. It occupies approximately 2 arpents (383.6 feet) inside the lower limit and was described in notarial acts of 1813 (Pedesciaux 1813) when Dupard sold the property to the U.S. Government.

No archival maps were available for examination covering the period between 1813 (the post-hurricane rebuilding of the America fort) and 1830 (the first township and range survey). The photograph detail of Maj. Houston's 1863 map (Figure 14) has no scale but shows "Cutoff Road" at the elbow of the Turn and places the "old fort" equidistant between Cutoff Road and plantation structures of "J. Villere," who by then had established the Fort St. Leon Plantation. Features labeled "Cut-off Road" and "Old

Spanish Fort St. Leon" appear on a 1882 U.S. Coast Survey map of the river (not figured). This map has a scale, and the distance between these features measures approximately 3,300 feet. The Belle Chasse Plantation map of 1912 also confirms the location of the America fort at the Dupard property line. This map (Figure 23) indicates 3,374 feet from the lower limit of Fort St. Leon Plantation (formerly the Dupard line) to Cutoff Road. This can be repeated successfully on the USGS Chalmette Quadrangle (1972) by measuring from the lower limit of Section 6 to the lower limit of Section 8 (i.e., Cutoff Road, and on aerial photographs by measuring from the hedgerow previously identified as that property line to the section line that represents Cutoff Road.

After determining the Dupard line with a fair level of confidence on the ground, the location of the American fort is established also. In other words, the position of the American fort can be confirmed because we know it occupied the last two arpents of the Dupard section. The Dupard section can be identified on the ground using landmarks and measurements from archival maps and aerial photographs and corroborated by archeological features there (brick wall remnants at the water's edge).

The location and position of the earlier French fort is more difficult to determine because the available archival information is less precise and the site has experienced surface disturbances. Ground surface disturbance obviates the efficacy of aerial reconnaissance and obscures archeological features. When taken together, however, archival information, aerial photographs, and the archeological record provide evidence that the American and French forts share a common site.

We know the French fort was constructed on land conceded to J.B. Prevost in 1721. We do not know where on the original concession this construction took place, nor do we know if the size and limits of the Prevost concession are the same as the land inherited by Salomon and Francisco Prevost. Assuming however, that no major land transactions occurred between the time that the French king honored J.B. Prevost's claim for fort construction damages to his property and the time the Prevost nephews inherited the 76-arpent tract from their uncle, evidence of the French fort should be retrievable from lands on English Turn that were later designated as Sections 5, 6, or 7 on archival township and range maps.

Concluding Remarks

Emphasis has been placed primarily on landscape features that assist in locating documented items such as Cutoff Road, property lines, brick wall remnants in the river, and in viewing certain changes in the surface appearance of the site.

Concerning Cutoff Road, two postulations are made. First, a map of 1912 (Figure 23) provides a distance measurement from the Dupard property line (called by this time the lower limit of the Fort St. Leon Plantation) to Cutoff Road as 3,374 feet. This is confirmed on the topographical maps as well as aerial photographs from 1945 and 1978 as being a relic road that resembles the Cutoff Road on Maj. Houston's map (Figure 14) situated where the river turns sharply south. Furthermore, this site would have permitted direct access or head-in parking for the vessels attempting the bend to debark their passengers. On the other hand, this road may have been a later shortcut to Cutoff, and the modern road that borders the Research Center on the west may have been the location of Cutoff Road during French fort times. Based on other observations of these photos, roads are noted to have been abandoned and then reopened as land use and development changed or expanded.

Distinguishing property lines on the vertical photography was not as difficult as reconciling their measurements with existing documents. Consideration must be given to error factors in scale determination from resolution problems and distortion due to tilt and relief (Lyons and Avery 1977) and to inevitable inconsistencies of early surveys and mapping techniques. For example, discrepancies in the measurements of property lines are difficult to resolve because of (1) the loss of vital bits of information, (2) confusing and ambiguous archival maps (e.g., Latour 1815 (not figured) and Amelot 1753, (Figure 5), and (3) errors past and present in scaling and reproducing maps and aerial photos. Nevertheless, it is the writer's opinion that the Prevost inheritance originated at the Orleans/Plaquemines Parish Line and continued downriver, 14,595 feet (76 arpents) whether measured at, near, or beyond the fort.

The bricks in the river have shifted slightly as indicated by the position of certain clusters of wall sections. Very deep holes are located in the soft substrate adjacent to the wall remains (Allen 1981). This suggests that eddy action could undermine and allow slumping and settling of these objects, but no substantial relocation is

indicated. The brick wall remnants are + 120 feet from the modern bank, which has receded approximately 100 feet from the shoreline where the American bastion was erected in the early 1800s.

Because archival letters and maps juxtapose the French fort with Prevost's habitation, it is unquestionable that the French built the fort anywhere other than on the Prevost concession and/or inheritance. This distinction between the concession and inheritance must be made for two reasons: (1) the 76-arpent tract is mentioned not as the original concession but as the inheritance of Prevost's newpew, and (2) Prevost or his heirs may have made property transactions for which no record has been found.

In support of the idea that the two forts are conterminous, a matched-scale overlay of Lafon's 1813 America fort site (Figure 9) over Deverges 1747 map showing the plan of the French fort (Figure 2) is a remarkably good fit, including the curvature of the river bend. Lafon was probably aware of Deverges map and could have incorporated it into his own, thereby recording the American fort in the same place. When properly scaled, the DeBatz plan of the great battery of the French fort (1749) (Figure 3) also fits the Lafon overlay. Additionally, Lafon's 1805 sketch (Figure 29) of the Larch tract includes a reference to the "old" (vielle) or "lookout" (veille) "levee of the batterys" written in the lower (upriver) corner of the property. This levee may be the one identified on the DeBatz plan. It measures + 1700 feet from the western fort wall, downriver to the barbette. The French fort, therefore, should lie upriver from Section 7 no more than the length of that levee. Furthermore, the "old works" referred to on Lafon's 1813 (Figure 8) plan of the post-hurricane American fort could also mean the old works of the French fort instead of supposedly the hurricane-damaged American fort. Both interpretations place the French fort within the lower portion of Section 6, where current archeological endeavors have concentrated.

On the land side of the levee road, three dark patches are noticeable on many aerial photos. Two near the side roads leading to the bunkers have the configuration of borrow pits, and the contrast of these patches against the surrounding vegetation further suggests differential growth in areas of high moisture. The 1966 series zeros in on these anomalies to reveal them as clearings but free of standing water at the time. The third dark patch is approximately 500 feet west of the catwalk just north of the levee road. At this close range the contrast is indistinct;

however, vegetation appears darker and slightly fuzzy (cf. willows) compared to taller oaks and poplars. It is definitely not the same kind of clearing like the other dark patches.

Recommendations

Aerial photography has become a worthy tool of archeologists, in many cases an indispensable tool. Not all sites lend themselves equally to remote sensing because of undulating terrain or history of widespread surficial disturbance. Consequently, unless topography and integrity of the site is appropriate, no specially requested aerial photographs need to be generated. Positive results can generally be gained by examining existing aerial photos, whether during the pre-excavation logistical study or post-excavation study of environmental and historical factors. Both small-scale and large-scale photos are considered helpful, and color infrared transparencies prepared under strict emulsion control are recommended for vegetative studies and moisture-related anomalies.

For the present project, the writer recommends obtaining appropriate clearance to ground check or shovel test in the areas north of the levee road where aerial photograph inspection revealed anomalous dark patches of vegetation or standing water. It is felt that the dimensions of the French fort (806 x 730 feet) indicate the possibility of locating artifacts in a relatively undisturbed context in that area.

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Figure C-1. Detail of the 1972 USGS Chalmette Quadrangle with property lines accented.

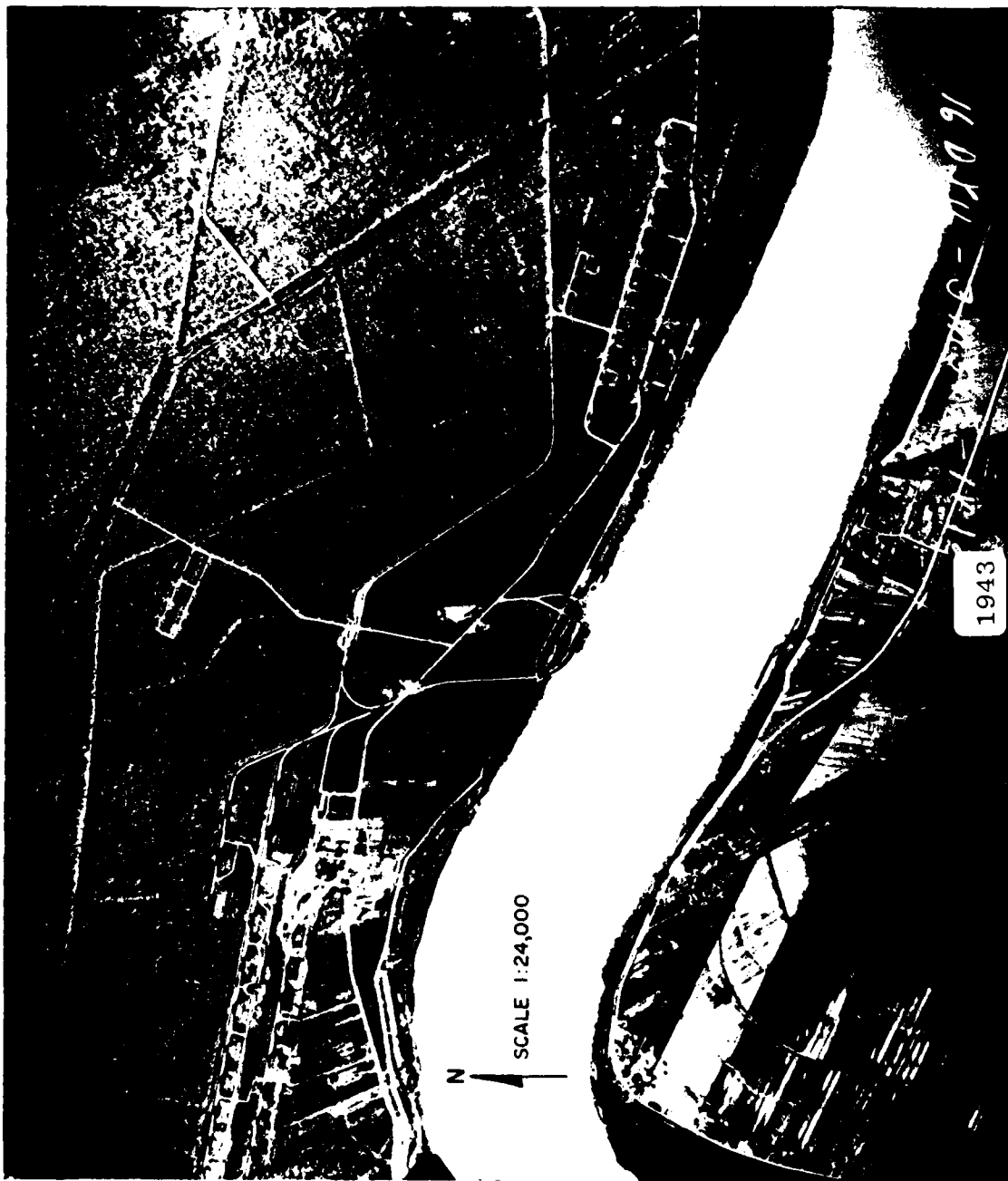


Figure C-2. Detail of 1943 aerial photograph.



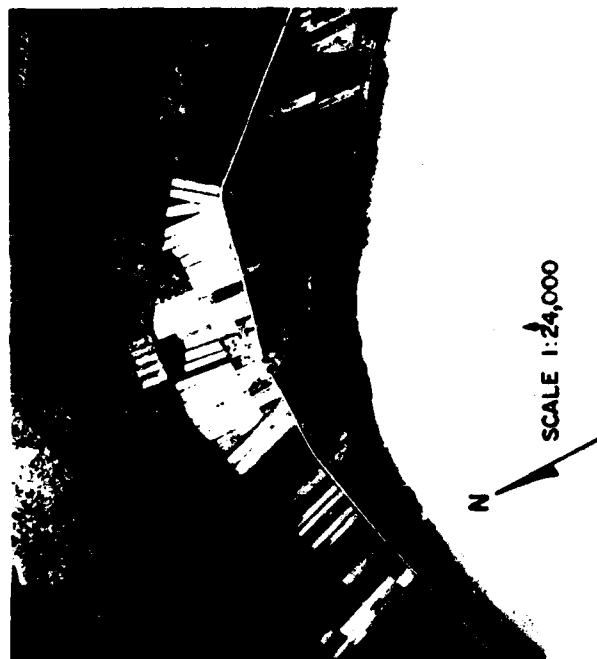
Figure C-3. Detail of 1954 aerial photograph.

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Figure C-4. Detail of 1966 aerial photograph.

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1933

Figure C-5. Aerial photograph, 1933.

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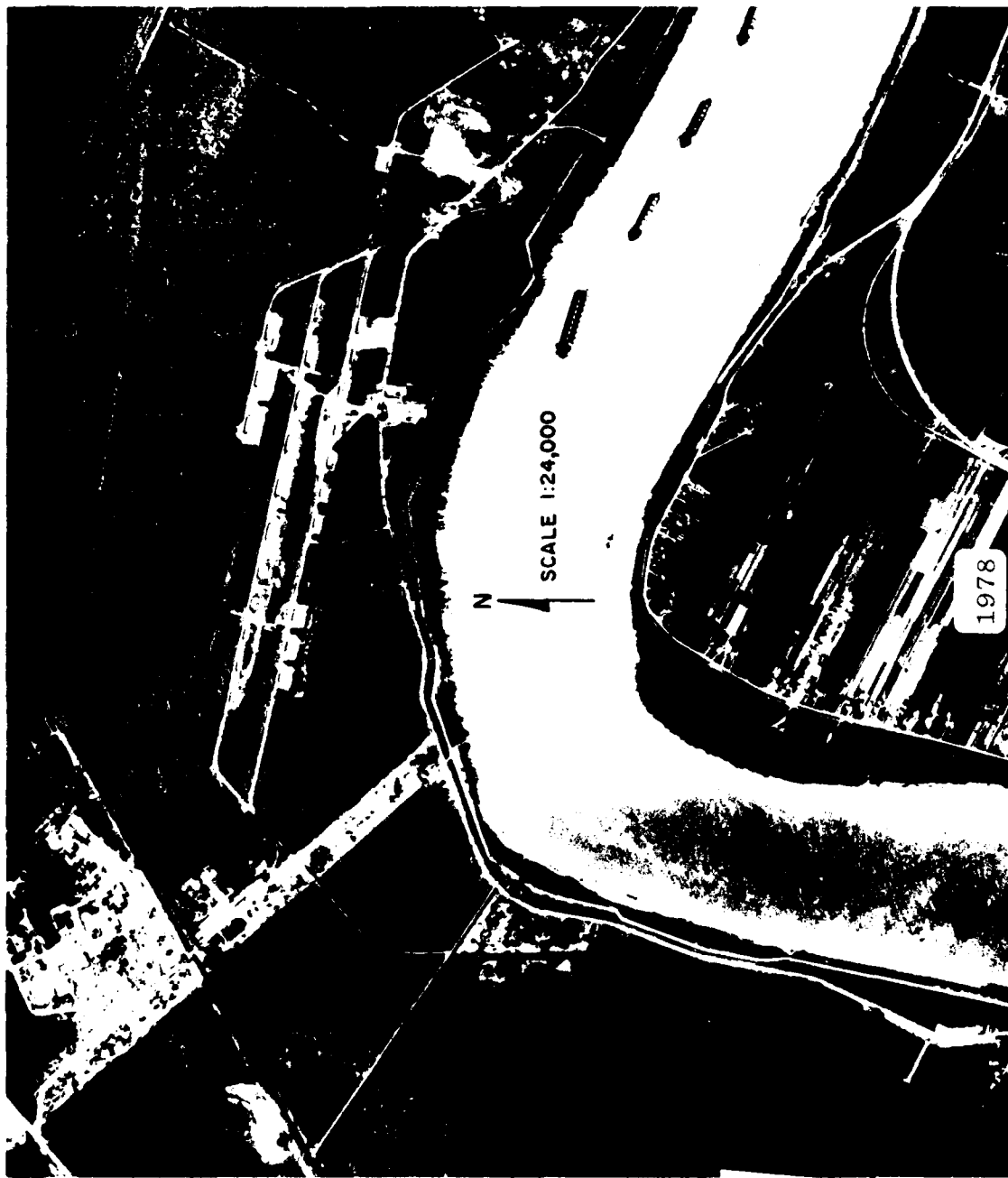


Figure C-6. Detail of 1978 aerial photograph.

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Figure C-7. Section lines overlaid on 1951 aerial photograph.

T.14S.-R.25E.

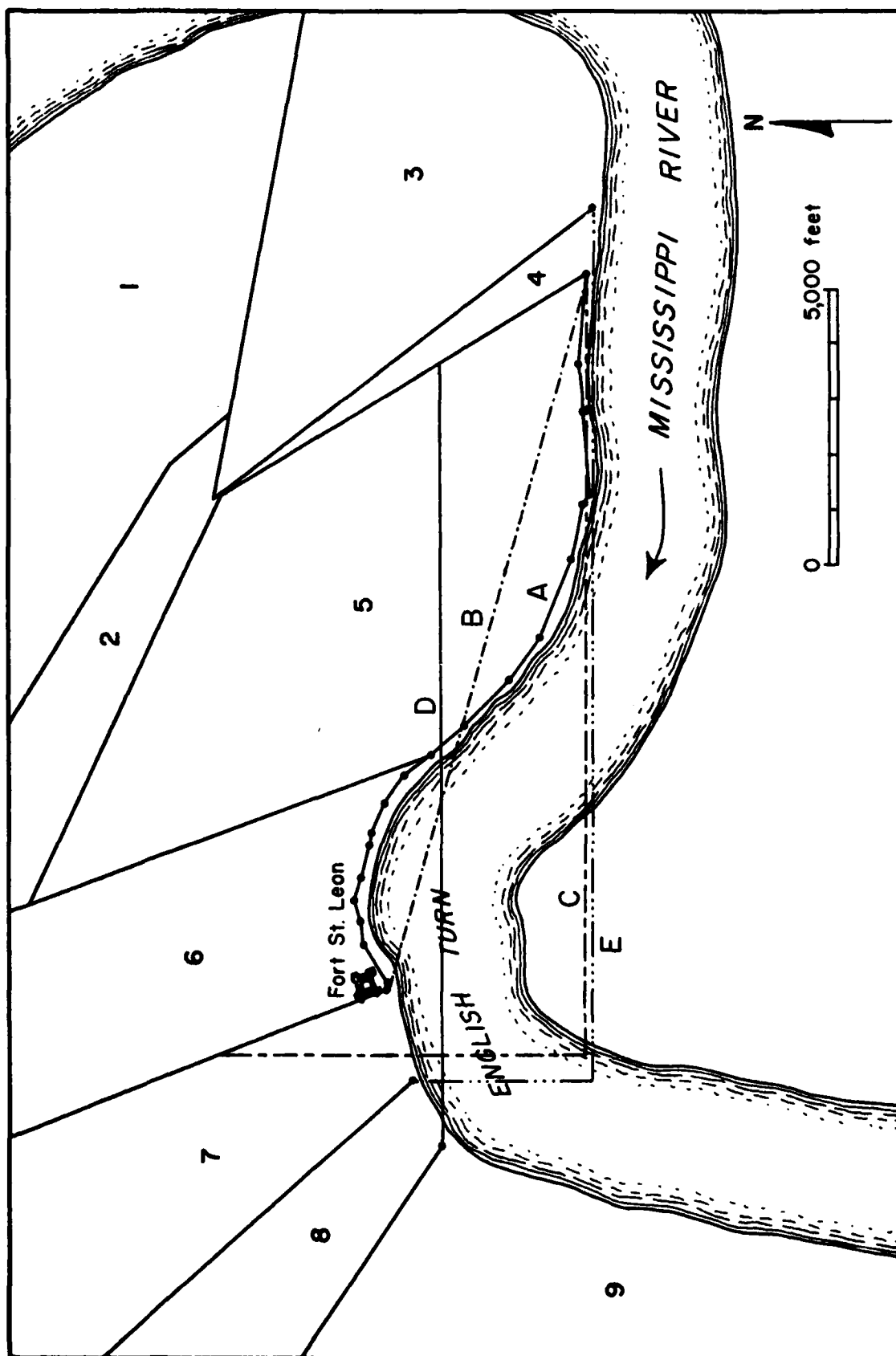


Figure C-8. Methods of measuring the Prevost concession.

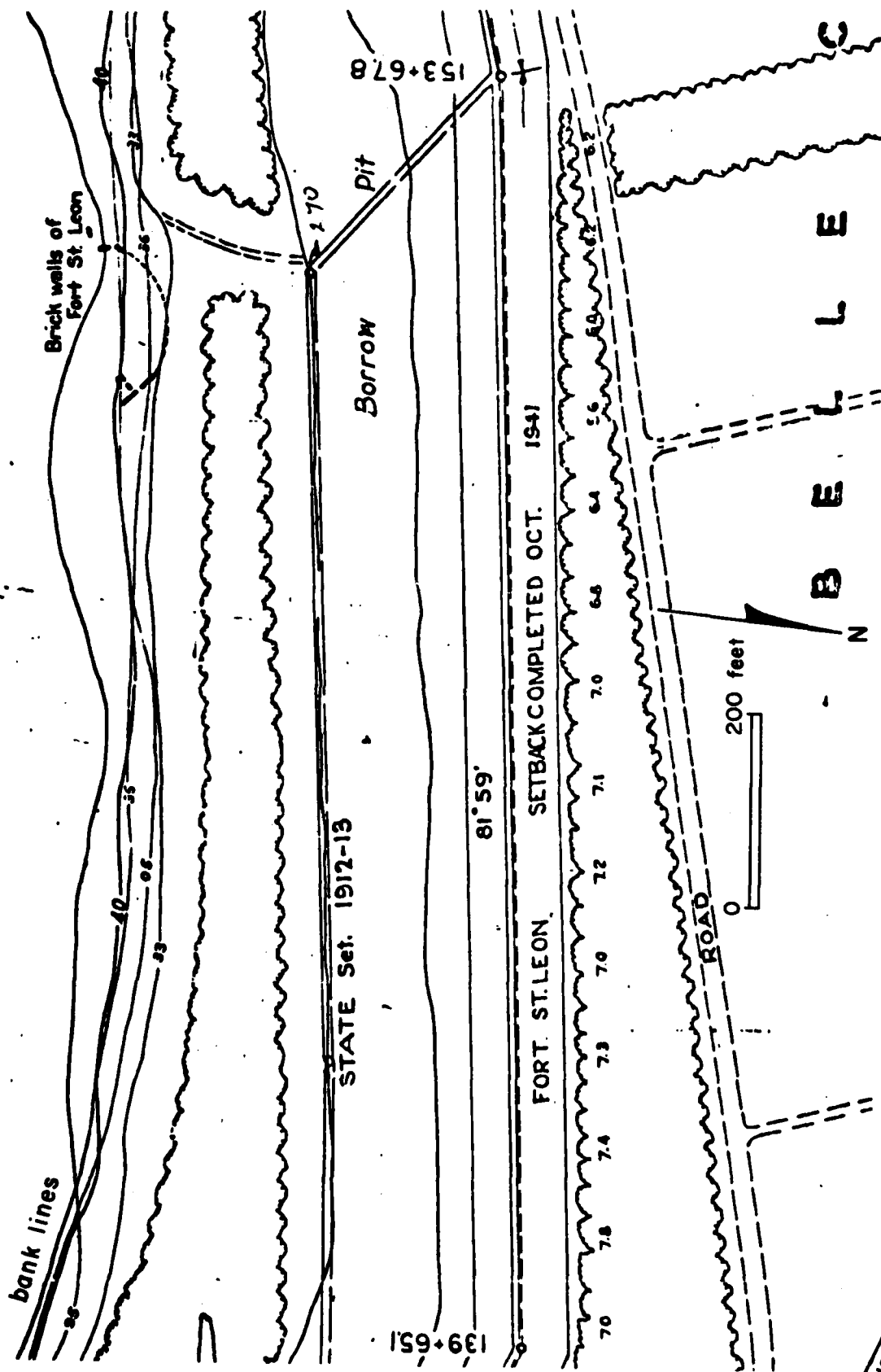


Figure C-9. Detail of Barataria Levee District map, 1945.

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Appendix D

ARTIFACT DESCRIPTIONS

Table D-1 presents artifacts recovered during the 1981 testing phase at Fort St. Leon (16PL35). Items made of plastic are not included, but it must be noted that plastic or fragments were removed from the backdirt of BHTs 5 and 6, the organic zone (Zone 2) of BHT 17, and from Levels 2 and 3 (2.15-1.82 m AMGL) of Unit 1. Elevation is recorded in meters above mean gulf level (AMGL) as computed for the day transit readings were taken. Datum is recorded as 2.77 m AMGL.

ARMAMENTS (Plate D-2)

<u>Category and Description</u>	<u># of Pieces</u>	<u>Provenience</u>
Scabbard clip	1	Unit 3, 1.26 m AMGL
Lead bullet (.30 cal)	1	Unit 4, 1.27 m
Lead bullet (.38 cal)	1	Unit 4, 1.25 m
Lead shot	1	Unit 10, 1.77 m
Lead shot	1	BHT 5
Lead shot	1	Surface
TOTAL	6	

The items in this category consist of a scabbard clip, small pieces of lead shot, and two spent bullets, both of which are small caliber (.30 and .38) and indicate post-1850 time periods. The scabbard clip has two rivet attachments and is similar to one found at Fort Michilimackinac (Stone, 1974: Figure 107L). Stone (1974:277) attributes this variety to British workmanship.

BONE: FAUNAL

<u>Category and Description</u>	<u># of Pieces</u>	<u>Provenience</u>
Mandible fragments (nutria)	3	Unit 1, 2.07-1.82 m
Unburned unidentifiable	3	Unit 1, 2.07-1.82 m
Plastron fragments (pond slider turtle)	3	Unit 1, 2.02-1.82 m
Plastron and carapace fragments (pond slider turtle)	2	Unit 2, 2.27 m
Unburned fragment (lg. mam.)	1	Unit 2, 1.97-1.77 m
Unburned fragment (lg. mam.)	1	Unit 3, 2.69-2.67 m
Pelvis fragment (goat)	1	Unit 3, 2.69-2.67 m
Burned unidentifiable	2	Unit 3, 1.19-1.17 m

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Unburned unidentifiable	3	Unit 3, 1.19-1.17 m
Deciduous molar (cow)	1	Unit 3, 1.19-1.17 m
Femur fragment (deer)	1	Unit 3, 1.19-1.17 m
Mandibular molar (cow)	1	Unit 3, 1.27 m
Burned fragment (med. mam.)	1	Unit 3, 1.07 m
Unburned unidentifiable	3	Unit 3, 1.19-1.17 m
Burned unidentifiable	3	Unit 3, 1.19-1.17 m
Burned unidentifiable	1	Unit 4, 1.34 m
Burned unidentifiable	5	Unit 4, 1.32 m
Unburned fragment (lg. mam.)	1	Unit 4, 1.00 m
Burned unidentifiable	1	Unit 4, 1.27 m
Burned unidentifiable	2	Unit 4, 1.27-1.17 m
Burned unidentifiable	10	Unit 4, 1.17 m
Unburned unidentifiable	1	Unit 4
Fin ray and vertebrae (fish)	2	Unit 4, 1.17 m
Burned unidentifiable	1	Unit 10, 1.67-1.57 m
Unburned unidentifiable	2	BHT 1A, 1.54 m
Unburned unidentifiable	4	BHT 1A, 1.5 m
Burned unidentifiable	2	BHT 3
Rib (snake sp.)	1	BHT 4
Unburned fragments (med. mam.)	3	CHT 5
Unburned fragment (lg. mam.)	1	BHT 7
Metacarpal (dog)	1	BHT 8
Maxillary canine (dog)	1	BHT 9

TOTAL

68

The relationships of recovered animal bones to site occupants are difficult to assess at some sites because these remains can be deposited by agencies other than humans and in this case could be washed in by flooding. Nevertheless, some of the species identified from osteological materials recovered from lower levels of Unit 3 are those commonly associated with military posts and plantations of the period. Cow, sheep/goat, and deer remains are identified from these levels and are consistent with lists of provisions mentioned in related documents (Rowland and Sanders 1929).

Of the 68 animal bones recovered, 2% are burned. The majority of burned fragments come from Unit 4 and include fish elements from below the brick feature (1.17 m AMGL). Considering the proximity of the river, the utilization of fish as a food source is expected.

Several other identified animals are considered recent intrusives, that is, not related to the study period. For example, dog remains from BHTs 8 and 9 were removed from the trench walls less than 1 m below the surface. The same is true for the pond slider turtle bones from Units 1 and 2.

Nutria remains from Unit 1 are also of recent origin having been introduced to Louisiana by Mr. I. E. McIlhenny of Tabasco fame in 1930 (Caras 1967).

BONE: HUMAN

<u>Category and Description</u>	<u># of Pieces</u>	<u>Provenience</u>
Cranial fragment	1	BHT 5
Vertebral fragment	1	BHT 5
Lumbar vertebra	1	BHT 7
TOTAL	3	

Human bone was recovered from backdirt of BHTs 5 and 7. Again the origin and relationship of these bones to the French or American military occupations is uncertain. It is quite possible that they represent one or more river-scoured burial(s) or accident victim(s) washed in and deposited here.

BRICK AND MORTAR

<u>Category and Description</u>	<u># of Pieces</u>	<u>Provenience</u>
Orange 10R 5/6*	2	Unit 1, 2.15-2.07 m AMGL
Orange 5YR 6/6	4	Unit 1, 2.15-2.07 m
Brown 7.5YR 5/4	1	Unit 1, 2.15-2.07 m
Orange 7.5YR 6/6	2	Unit 1, 2.15-2.07 m
Orange 5YR 6/6	2	Unit 1, 2.07-2.02 m
Brown 5YR 5/3	1	Unit 1, 2.07-2.02 m
Red 2.5YR 3/6	1	Unit 1, 2.07-2.02 m
Orange 10R 5/8	4	Unit 1, 2.02-1.82 m
Tan 7.5YR 6/4	1	Unit 1, 2.02-1.82 m
Orange 5YR 6/8	1	Unit 2, 2.29 m
Orange 5YR 6/8	2	Unit 2, 2.29-2.09 m
Gray 5YR 4/0	1	Unit 3, 1.19-1.17 m
Red w/gray glaze 10R 4/6	1	Unit 3, feature
Orange 2.5YR 5/6	1	Unit 3, feature
Gray glazed 2.5YR 4/0	1	Unit 3, feature
Orange 2.5YR 6/8	1	Unit 4, feature
Red w/gray glaze 10R 5/3	1	Unit 10, 1.62-1.52 m
Mortar fragment	1	BHT 1A
Orange 2.5YR 6/8	1	BHT 1
Orange 5YR 6/8	2	BHT 1
Orange 10R 5/6	1	BHT 1
Orange 5YR 6/8	1	BHT 3
Pink 2.5YR 6/4	1	BHT 3
Red 10R 5/3	1	BHT 4
Orange 10R 5/6	1	BHT 4

Orange 2.5YR 5/8	4	BHT 4
Tan/pink 2.5YR 5/4	1	BHT 4
Orange 2.5YR 6/8	1	BHT 4
Orange 2.5YR 4/6	1	BHT 4
Orange 5YR 7/6	2	BHT 4
Orange 5YR 6/6	1	BHT 4
Orange 2.5YR 5/8	1	BHT 5
Orange 2.5YR 6/8	1	BHT 5
Orange 5YR 6/8	1	BHT 5
Orange 10R 5/8	2	BHT 5
Mortar fragment	1	BHT 6
Gray glazed 7/5YR 5/0	1	BHT 6
Orange 2.5YR 5/8	1	BHT 6
Orange 2.5YR 6/8	1	BHT 6
Orange 10R 5/8	1	BHT 6
Mortar fragments	13	BHT 7
Gray glazed 2.5YR 5/0	1	BHT 7
Brown 5YR 5/3	1	BHT 7
Orange 2.5YR 5/8	1	BHT 7
Orange 5YR 5/6	2	BHT 7
Tan 7.5YR 6/4	2	BHT 7
Orange 5YR 6/8	1	BHT 16
Orange 10YR 5/6	1	Surface
Mortar fragments	2	Surface

TOTAL

80

*Munsell Soil Color Charts (1975)

Whole bricks and brick fragments were ubiquitous in the backdirt of BHTs 4, 5, 6, and 7 and were found on the surface near the shore. These fragments range in color from dark red to orange, and several have a greenish-gray glaze on their surfaces. This glazing may have been an accidental occurrence during firing (Greer 1981) rather than from intentional manufacture.

Samples from backhoe trenches were removed as discovered, and the number of specimens reflect the relative abundance of those fragments roughly greater than 3 cm on a side. Four whole bricks were removed from the feature area of Units 3 and 4 and were measured. The length, width, and height of each brick are recorded in Table D-2.

BUTTON

<u>Category and Description</u>	<u># of Pieces</u>	<u>Provenience</u>
4-way, milkglass	1	BHT 6, 2.09 m AMGL

This specimen is 0.6 inches in diameter, or 20 lignes. According to Peacock (1972), milkglass buttons are of American origin, 1887-1910.

CERAMICS (Plate D-1)

<u>Category and Description</u>	<u># of Pieces</u>	<u>Provenience</u>
Porcelain		
white undecorated sherds		
with impressed "26"	2	Unit 5, 1.67 m
Stoneware		
salt-glazed exterior,		
Albany slip interior	1	Unit 10, 1.62-1.52 m
white chamber pot sherds		
raised scallops under lip,		
"Ironstone"	2	Surface
Earthenware (by paste color)		
Red: lead glaze w/gray-		
green tint, rim	1	Surface
White: undecorated	1	Unit 4, 1.37 m
"	2	Unit 4, 1.27 m
"	2	Unit 4, 1.17 m
"	1	Unit 5, 1.37-1.17 m
"	6	Unit 10, 1.62-1.52 m
"	2	BHT 1
"	1	BHT 4
"	2	BHT 6
"	8	Surface
White: decorated		
annular slip design, rims	2	Unit 3, 1.18 m
annular slip design, body	3	Unit 10, 1.62-1.52 m
annular slip design, body	2	Surface
edge decorated green rim	1	Unit 10, 1.62-1.52 m
edge decorated blue rim	2	Surface
cream glaze, body	1	BHT 19
handpainted underglaze,		
handle	1	BHT 1
handpainted underglaze,		
body	2	Surface
overglaze transfer, handle	1	Surface
underglaze transfer	2	Surface
yellow glaze	1	Surface
Other		
conduit tile	1	BHT 19
fired clay	1	Unit 3, 1.19-1.17 m
unidentifiable, burned	1	Unit 10, 1.77 m
TOTAL	53	

Fifty-three sherds were recovered of which 20 were found on the surface. Undecorated earthenware sherds are the most frequently occurring type, but decorated earthenware are also recorded. Some of the vessel forms represented include bowls, plates, chamber pots, and storage jars. None of the sherds suggest a date earlier than the first few decades of the 19th century, except the single creamware sherd and at least one of the two sherds of red paste earthenware. Developed in England, creamware became a popular ware after 1760 (Towner 1978:20). Creamware is still manufactured today, however, and thus its isolated presence at the Fort St. Leon site gives no strong evidence for an early occupation. Similarly, redwares resembling the two in this collection were common utilitarian ceramics during the 18th century (Miller and Stone 1970) and are similar to Barton's Type 3 from the Machault shipwreck (Barton 1977). The glazed redware sherd is a type of Liguria ware made near Genova, Italy and occurs in small quantities on mid 18th century French Colonial sites (Gussett 1983). A sherd of fired clay from Unit 3 (1.19-1.17 m AMGL) appears aboriginal but is covered with mortar. It is smooth on both sides with uniform thickness. It could have served as "chinking."

CINDERS/SLAG

of Fragments

2
9
3
1
3
4
2
1
94
6
5
7
35
2
2

176 TOTAL

Provenience

Unit 1, 2.07-2.02 m
Unit 2, 1.97-1.77 m
Unit 3, 1.19-1.17 m
Unit 4, 1.17 m
Unit 7, 1.07 m
Unit 8, 1.35 m
Unit 10, 1.77 m
Unit 10, 1.67-1.57 m
BHT 1
BHT 2
BHT 3
BHT 4
BHT 5
BHT 8
BHT 9

A profusion of small, irregular lumps of flocculent metal was removed from several units and trenches. This slag is found in many places with dark red cinders and may reflect smithing activities at the fort although it may have

washed in along with the coal.

CLOTHING

<u>Category and Description</u>	<u># of Pieces</u>	<u>Provenience</u>
Leather boot heels	2	BHT 7, 0.92 m

Two leather boot heels were removed from the area just above the brick feature in BHT 7. They appear to be matching heels as evidenced by their similar shape and identical manufacture--laminated layers constructed with small cobbler's nails.

COAL

<u># of Pieces</u>	<u>Provenience</u>
1	Unit 2, 2.19 m
1	Unit 3, 1.17 m
1	BHT 1
2	BHT 2
4	BHT 3
2	BHT 4
2	BHT 5
2	BHT 6
<u>2</u>	BHT 8
17	TOTAL

Seventeen lumps of coal were removed from several trenches and two excavation units. The origin of this coal is undetermined although it may have washed in from coal depositories along the river since it was present in many of the excavation units. On the other hand, it could be related to fort activity.

GLASS

Table D-3 shows the horizontal distribution of glass fragments by category. The following list indicates the vertical provenience of green bottle glass fragments only:

<u>Category and Description</u>	<u># of Pieces</u>	<u>Provenience</u>
patinated olive green	1	Unit 3, 1.68 m
olive green	1	Unit 3, 1.63 m
dark green	1	Unit 3, 1.25 m
dark green	1	Unit 3, 1.24 m
dark green	1	Unit 3, 1.19-1.17 m

dark green	1	Unit 4, 1.37 m
dark green	1	Unit 3, 1.29 m
olive green	1	Unit 4, 1.29 m
dark green	1	Unit 4, 1.20 m
dark green	3	Unit 4, 1.17 m
patinated olive green	1	Unit 4, 1.12 m
dark green	1	Unit 4, 0.78 m
dark green	1	Unit 8, 1.04-0.94 m
dark green	1	Unit 8, 0.99 m
dark green	1	Unit 10, 1.42-1.32 m
dark green	1	BHT 1, backdirt
dark green	1	BHT 4, backdirt
dark green	6	General site
olive green	8	General site

TOTAL

33

Approximately 156 fragments of glass were recovered from six units, seven trenches, and surface collection (n=20). Twenty-one percent of the fragments constitute the green bottle categories of which most are thick, dark green lower body portions of free-blown wine bottles. Unfortunately, no complete bases or tops were found. The olive green fragments are thinner, which may account for the lighter color, but appear to be free-blown bottle glass also. Two pieces of green glass with a heavy gold patina may be from the 18th century. With the exception of six fragments, all of the surface-collected glass are green bottle glass and were recovered in the disturbed borrow fill north of BHT 1 where many of the ceramics were found.

The majority of glass, however, are remains of modern bottles (e.g., beer bottles, Clorox jugs), as well as remnants of fruit jars, light bulbs, and oil lamp chimneys. Two of these bottles are datable: (1) the shoulder and oval base of an amethyst medicine/whiskey pint bottle with a serif B on one end of the base and the number 3 at the opposite end was recovered from Unit 9, 76-73 m AMGL (amethyst glass is dated by Newman (1970) between 1880 and 1925); and (2) a small, clear tabasco sauce bottle was recovered complete from BHT 17 in the upper sand zone. The word McILHENNY is embossed across the depressed center of the base with the words TABASCO SAUCE around the edge of the base. Mold seam configuration indicates that the bottle was made by a semi-automatic machine. Newman (1970) claims such a bottle would normally be deposited archeologically during the period 1880-1913.

<u>Category and Description</u>	<u># of Pieces</u>	<u>Provenience</u>
light bulb base	1	Unit 1, 2.15-2.07 m
tin can seam	1	Unit 1, 2.15-2.07 m
wire (15g)	1	Unit 2, 2.99 m
tubular container (tin?)	1	Unit 3, 1.73 m
pipe fitting	1	Unit 3, 1.35 m
lead bands	3	Unit 3, 1.19-1.17 m
corroded mass, unidentified	1	Unit 3, 1.19-1.17 m
funnel (tin?)	1	Unit 3, 1.05 m
lead fragment	1	Unit 4, 1.17 m
triangular file (iron)	1	Unit 4, 1.17 m
corroded mass, unidentified	6	Unit 4, 1.17 m
brass fasteners (?)		
(Plate D-2:j)	2	Unit 4, 1.17 m
nut and bolt assembly	1	Unit 9, 1.32 m
corroded pipe	3	BHT 1, backdirt
corroded mass, unidentified	1	BHT 1, backdirt
length of chain	1	BHT 1, clay layer
wire (15 g)	1	BHT 2, backdirt
sheet metal	1	BHT 2, backdirt
iron nut	1	BHT 4, 1.49 m
corroded fragments, unidentified	4	BHT 6, 1.34 m
wire	1	BHT 7, 0.92 m
metal rod and washer	1	BHT 9, backdirt
flat container (tin)	1	BHT 17, west ext.
aerosol spray can	3	BHT 17, west ext.
penicillin tin (Norwegian)	1	BHT 17, 1.71 m
brass L-shape hook	1	Surface
TOTAL	41	

This category consists of miscellaneous metallic objects such as nuts, bolts, pipes, and chains, as well as smaller objects such as a light bulb base and fragments of metal containers (cans). Unidentified brass items are included in this category.

Many of these artifacts are clearly of modern manufacture, but some could date from the periods of French or American military occupation. Of particular note are several items collected from Test Units 3 and 4, within and below the brick layer. For example, the triangular file is similar to specimens found at Fort Michilimackinac in 18th century French contexts (Stone 1974:298, Figure 185). This artifact type, however, can hardly be considered diagnostic of that period, since it continues in use to the present virtually unchanged. Lead found in Test Units 3 and 4 could also have been associated with either Fort St. Leon

virtually unchanged. Lead found in Test Units 3 and 4 could also have been associated with either Fort St. Leon garrison. Furthermore, the presence of such material suggests casting of munitions.

KAOLIN SMOKING PIPES

<u>Category and Description</u>	<u># of Pieces</u>	<u>Provenience</u>
bowl fragment w/foot (Plate D-2:k)	1	BHT 1, backdirt
stem fragment	1	BHT 1, backdirt
stem fragment	1	BHT 2, backdirt
stem fragment	1	Surface

Four kaolin pipe fragments were found at the east end of the site near the disturbed levee borrow pit. Three fragments are stem remnants measuring 2, 3, and 3.2 cm in length with bore diameters ranging from 4/64 to 5/64 of an inch. Cautiously applying Binford's (1978) regression formula for assessing dates from pipe stem bore diameters, a date of 1786 is calculated for this admittedly small sample. One of the stem fragments includes a portion of the heel with a small, 6-lobed raised radial design. No other decorations are apparent. Configuration of the stem, spur, and bowl resembles a form of pipe popular between 1820 and 1860 (Nöel Hume 1969:303).

MONEY

Unit 4 yielded a small silver coin (Plate D-2:e) from the water-screened matrix at 60 cm BD. Identified as a half real minted for the Dominions of Spain, the coin bears the bust of Charles IV and the legend CAROLUS IIII][DEI GRATIA. The mint date is badly worn, but may be 1799. Such coins were produced during the period 1791-1808 (Schilke and Solomon 1964:173).

Half reals were common during the Spanish Period in Louisiana and were known as "Picayunes" (Darby 1981). Such a coin, however, does not necessarily indicate an actual Spanish presence; Spanish specie was legal tender in the United States until 1857.

NAILS (Plate D-2:a-d)

<u>Category and Description</u>	<u># of Pieces</u>	<u>Provenience</u>
hand-wrought spike	1	Unit 3, 1.69-1.67 m
hand-wrought spike	1	Unit 4, 1.68 m

cut nail (stamped head)	1	Unit 3, 1.19-1.17 m
cut nail	1	BHT 3
cut nail	1	BHT 4, 1.31 m
wire nail	2	Unit 1, 2.07 m
wire nail	7	Unit 1, 2.07-1.99 m
wire nail	2	Unit 1, 1.94-1.74 m
wire nail	1	Unit 2, 1.82 m
wire nail	2	Unit 8, 2.25-2.15 m
wire nail	1	Unit 8, 2.15-2.05 m
wire nail	3	BHT 1, S. Wall
wire nail	1	BHT 3, backdirt
wire nail	1	BHT 4
wire nail	1	BHT 8, S. wall
wire nail	1	BHT 9, S. wall
special purpose spike	1	Unit 9, 1.32 m
special purpose spike	1	BHT 9, 2.08 m
unidentifiable	7	Unit 4, 1.19 m
unidentifiable	1	BHT 5, backdirt

TOTAL

39

Thirty-nine nails and spikes were recorded and divided into five categories: hand-wrought spikes, cut nails, wire nails, special purpose spikes (modern spikes, e.g., railroad spikes), and unidentifiable (damaged and/or too rusted). Wire nails, commonly used after 1850 (Nelson 1968), are the most numerous. The oldest items (hand-wrought spikes) were recovered from the units containing the brick feature and from the surface collection area near the levee borrow pit.

Wrought nails were superseded by cut nails in 1800, though they continued to be used for certain tasks until 1850. Early cut nails exhibit hand-finished heads, but by 1825 stamped heads were being produced by the cut-nail machine (Mercer 1978). Of the cut nails in the Fort St. Leon collection, only one was in good enough condition to determine its mode of manufacture.

SHELL

<u>Category and Description</u>	<u># of Pieces</u>	<u>Provenience</u>
land snail	1	Unit 1, 2.07 m
land snail	2	Unit 1, 1.99-1.94 m
unidentified fragments	2	Unit 2, 1.97-1.77 m
oyster	2	Unit 3, 1.42 m
oyster	4	Unit 3, 1.18 m
oyster	2	Unit 3, 1.17 m
oyster	5	Unit 4, 1.37 m
unidentifiable fragment	1	Unit 5, 1.67 m

oyster	5	Unit 4, 1.37 m
unidentifiable fragment	1	Unit 5, 1.67 m
oyster fragments	6	BHT 1
oyster	1	BHT 3
oyster	1	BHT 4
oyster	<u>1</u>	Surface
TOTAL	28	

This category primarily consists of oyster shells and land snail shells. The majority of unbroken oyster half shells were recovered near the brick feature in Units 3 and 4.

WOOD

Much of the wood recovered during testing is of modern origin (e.g., plywood shingles) or fortuitous (e.g., driftwood). However, a piece of burned log (cypress?) was removed from Unit 3 1.27-1.09 m AMGL that might be associated with the brick feature. On the other hand, since it was lying atop the feature, it may have been related to the lumber activities during T. J. Dauterive's ownership of the Fort St. Leon Plantation in 1905. Also from Unit 3 are two pieces exhibiting saw marks. Two modern "pegs" were found in deeper sediments of Unit 5 (0.65 m AMGL) and BHT 4 (1.27 m AMGL), but their origin and utility are undetermined.

MISCELLANEOUS

This category includes remnants of seeds and rocks whose presence may be the result of human transport. The seeds are currently unidentified and were removed from upper levels of Units 1 and 7. A variety of rocks are recorded including sandstone, limestone, and one jasper cobble with no apparent evidence of tool manufacture. The presence of rocks in this location where there are not naturally occurring surface rocks suggests human importation. These rocks range in size from 5 cm to 15 cm.

SUMMARY

Most of the materials collected during the 1981 field season at Fort St. Leon were neither temporally nor ethnically diagnostic (except the Liguria ware sherd from mid 18th century). Other items that could be dated were in use over such a long time range and are of little help in distinguishing occupation periods at the site. In addition, a good number of the artifacts recovered are clearly modern

None of the artifacts are clearly of French manufacture. The Liguria sherd, Plate D-1:1 mentioned above, was of Italian manufacture. Although the triangular iron file found in Unit 4 is similar to specimens from 18th century French sites elsewhere in North America, it is not at all unique to that period or people. The scabbard clip and creamware sherd are known from 18th century British contexts, but again these could represent much later deposition. Other possible 18th century materials are the 33 fragments of green bottle glass, many of which could equally date from the 19th century.

Artifacts attributable to the 19th century are more numerous but fail to discriminate clearly between the known military and civilian occupations. Among them are the clay pipe fragments and a silver half real piece. The lead munitions recovered are perhaps more likely to have been associated with a military presence, but there is no reason to presume their absence in civilian deposits.

The ceramic sample tends to suggest civilian deposition by virtue of the great variety of wares represented. It is logical to expect greater uniformity of materials from a military context. Further, only a few of the sherds date from the first quarter of the century when the American fort was in use.

It is important to note, in conclusion, that the majority of materials that would date to the American military period or earlier derive from Units 3 and 4. Specifically, these items were found within and below the brick concentrations present in those units. This organic clay matrix has been interpreted as an old ground surface and clearly constitutes a cultural zone.

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TABLE D-1. ARTIFACT CATEGORIES AND HORIZONTAL PROVENIENCE, 16PL35

CATEGORY	EXCAVATION UNITS										BACKSHOE TRENCHES										Surf.	Total				
	1	2	3	4	5	6	7	8	9	10	1	1A	2	3	4	5	6	7	8	9			16	17	18	19
Armaments		1	2							1						1								1	6	
Bone: Faunal	9	3	17	23						1		6		2	1	3		1	1	1					66	
Bone: Human																2		1						3		
Brick/Mortar	18	3	4	1					1		4	1	2	12	5	5	20				1				80	
Button																1								1		
Ceramics:																										
Porcelain					2																				2	
Stoneware										1															3	
Earthenware, decorated			2							4		1	1										1	10	19	
Earthenware, undecorated																									9	
Other			1		5	1				6		2			1	2							1		26	
Cinders/Slag	2	9	3	1			3	4		3	94	6	5	7	35				2	2					3	
Clothing			2																						176	
Coal		1	1								1	2	4	2	2	2	2								17	
Glass:																										
Bottle	31	3	9	12	7			2	1	5	1		1	2		2						2			18	
Window			4							1															5	
Other	40	1	2							2	4	1		1	1							1			2	
Hardware	2	1	7	10					1		5	2	1	4	1							5			41	
Nails:																										
Wrought Spikes			1	1																					3	
Cut Nails			2																						4	
Wire Nails																			1	1					22	
Specialty																									2	
Unidentified																									8	
Shells:																										
Oyster																									1	
Snail	3		8	5							6		1	1											22	
Unidentified																									3	
Smoking Pipe		2			1						2		1												1	
TOTAL	116	24	64	68	11	0	3	9	3	26	123	8	12	17	29	50	17	23	6	6	1	5	3	2	49	675

TABLE D-2. COMPARISON OF BRICK SIZES (length x width x height in inches)

1812 Letter	1880 Standard	1889 Common ^a	1889 Face ^a	16PL35	Magnolia ^b Plantation ^b	Kiln Site ^b	Site A ^b
9 x 4.5 x 2.3	8 x 4 x 2	8.3 x 4 x 2.3	8.4 x 1.4 x 2.3	7.5 x 3.5 x 1.8	8.2 x 3.9 x 2.6	8.4 x 3.4 x 2.3	8 x 4.9 x 2.9
				8.5 x 2.7 x 2.3	? x 4.0 x 2.9	? x 4.4 x 2.5	? x 3.8 x ?
				? x 3.7 x 1.8			
				8.2 x 3.7 x 2.1			

^a (Kelly and Kelly 1977)

^b These 19th century (or earlier) sites are located on U.S. Coast Guard property upriver from the project site.

TABLE D-3. GLASS RECOVERED FROM 1981 TESTING, 16PL35

CATEGORY	UNITS															BACKHOE TRENCHES										Totals	
	1	2	3	4	5	6	7	8	9	10	1	1A	2	3	4	5	6	7	8	9	10-15	16	17	18	19		Surface
Bottle																											7
amber	5	1															1										2
amethyst																											27
clear	18				5				1	1			1		1								1				37
dark green				6	10					3	1															6	13
olive green				2	2			11							1											8	11
brown (Clorox)	8	2																				1				4	6
aqua				1																							1
purple/black					1																						1
Window																											5
aqua				4						1																	
Other																											
clear unid.	4			2						2	3																11
commerical jar																											
or fruit jar	7												1			1	1						1				11
oil lamp																											
chimney	15	1																								1	18
light bulb	13																									1	13
milkglass																											1

Plate D-1.

- (a) Edge decorated (green), rim sherd, Unit 10;
- (b) White undecorated, Surface;
- (c) Handpainted, Surface;
- (d) "Ironstone" chamber pot w/handle scar, Surface;
- (e) Red paste unglazed earthenware, Surface;
- (f) Cream glaze, BHT 19;
- (g) Annular slip design, Unit 3;
- (h) Handpainted underglaze handle, BHT 1;
- (i) Red paste gray/green lead glaze (Liguria ware), BHT 1A;
- (j) White undecorated earthenware, BHT 19;
- (k) Annular slip design, Surface;
- (l) Blue transfer overglaze handle, Surface;
- (m) Handpainted underglaze "Gaudy Dutch," Surface.

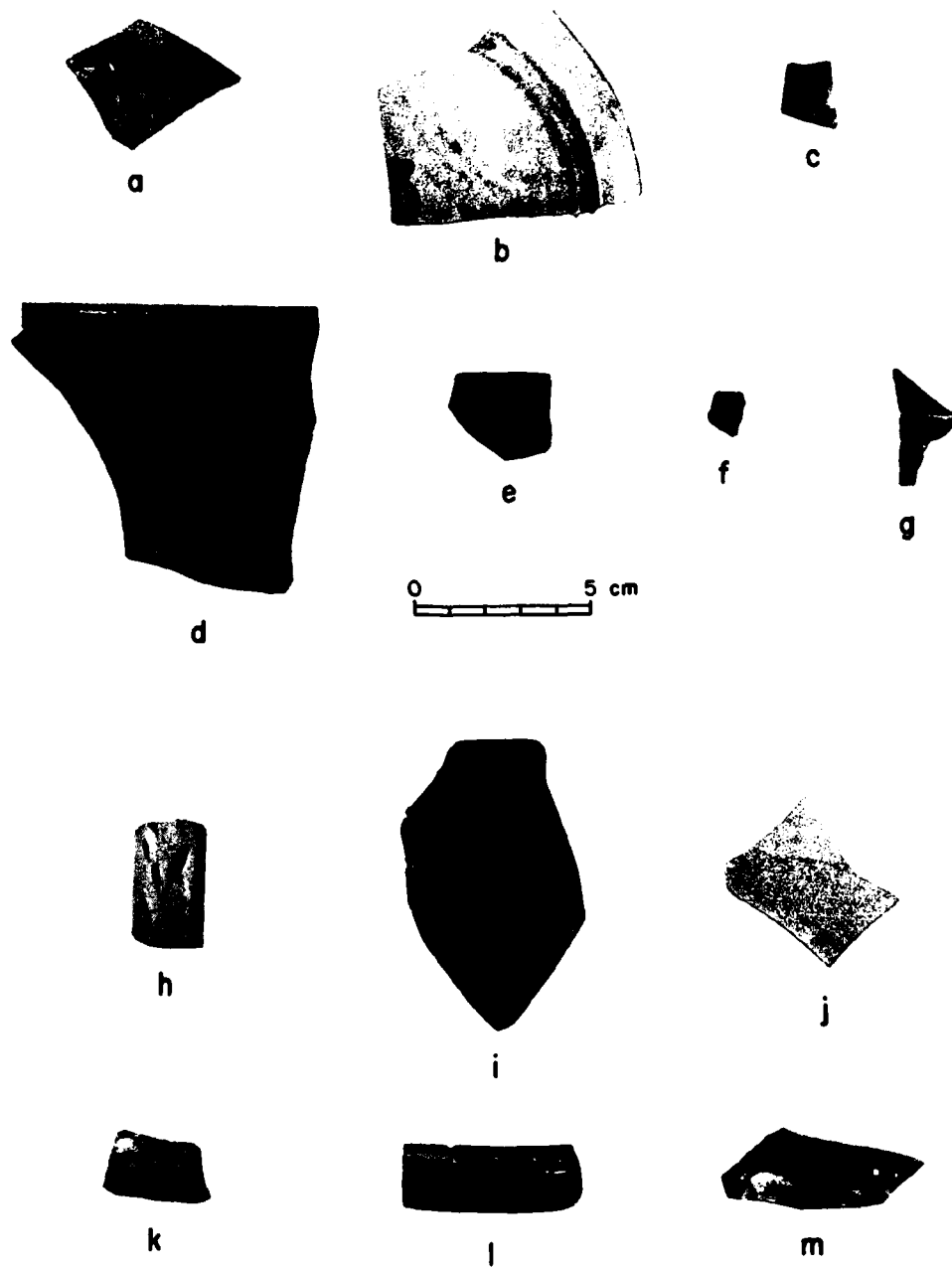


PLATE D-1. Ceramic Artifacts.

Plate D-2.

- (a) Nail fragments, Unit 4;
- (b) Machine cut nail, Unit 3;
- (c) Wrought spike, Surface;
- (d) Cut nail fragment, Unit 3;
- (e) Half-real coin, Unit 4
- (f) Drawing of similar half-real coin (from Schilke and Solomon 1964);
- (g) Lead bullet, .30 caliber, Unit 4;
- (h) Lead bullet, .38 caliber, Unit 4;
- (i) Brass scabbard clip, Unit 3;
- (j) Brass fastener, Unit 4;
- (k) Kaolin smoking pipe fragment, BHT 1.

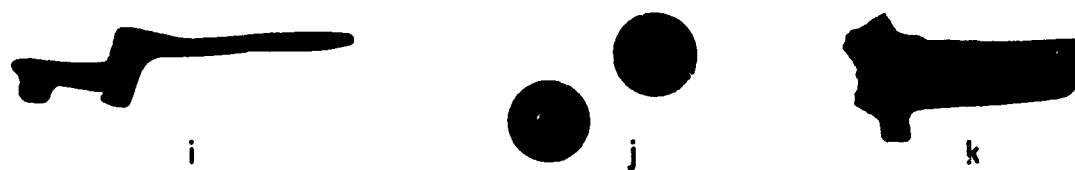
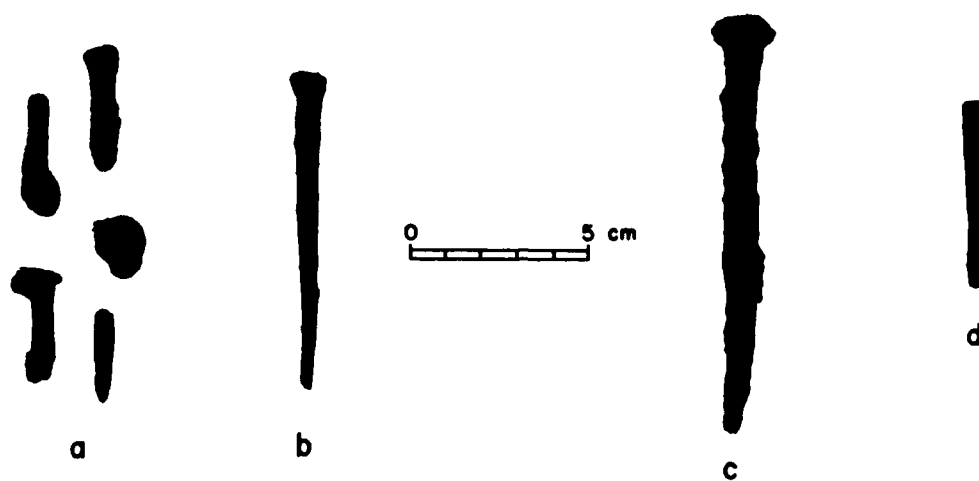


PLATE D-2. Artifacts.

Appendix E

MAGNETOMETER SURVEY AT FORT ST. LEON

by

T. R. Hays

Micromagnetic Survey

On September 6 and 7, 1981 a magnetometer survey was conducted at four locations at Fort St. Leon (16PL35), Louisiana. The purpose of the research was to identify the presence of magnetic anomalies at the site that might be indicative of buried cultural features.

Micromagnetic surveying constitutes one of the many testing procedures available to archeologists. Historic sites often contain buried walls, foundations, pottery, fire hearths and trash dumps. Many of these features can be detected with the magnetometer because they are more magnetic than the surrounding material (Breiner 1973). These magnetic anomalies, which result from the contrast in magnetic properties between the cultural features and the surrounding matrix, are a function of the permanent magnetization of magnetite in the feature. This remanent magnetization is greatly enhanced by firing. When a magnetite-bearing clay is heated to a relatively high temperature and cooled in the earth's magnetic field, the magnetic grains realign their magnetic dipoles in the direction of the earth's total field at the time (Aitken 1974). This magnetization is especially prominent in baked clay objects such as bricks, tiles, pottery, kilns, hearths, and similar features.

Methodology

The magnetometer survey was accomplished using a Geometrics portable proton precession magnetometer. The proton precession magnetometer measures the strength of the earth's magnetic field. Distinctive disturbances or variations in the strength of that field, called "anomalies," can be caused by geological formations, manmade structures, as well as ferrous objects (Breiner 1973). While the magnetometer can provide the location of magnetic anomalies, it does not allow for the direct identification of the cause of the anomaly.

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The field survey was used in conjunction with the established testing plan. The survey blocks in most instances were placed in areas where features were expected based on extrapolation from test trenches. It was hoped that the presence of buried cultural features could be established with the magnetometer survey.

Survey methods included setting the station spacing at 1 m, optimizing the sensor height, and establishing a base station for recording diurnal variation. The sensor height was adjusted to be as close to the ground as possible while providing a maximum noise level of ± 1 gamma. The selected sensor height was 1 m above the surface of the ground.

The spacing of the grid was set at 1-m intervals. This distance was chosen to maximize the probability of locating small buried cultural features. The survey procedure consisted of taking three magnetometer readings at each survey point on the grid. If differences in the readings occurred, an average reading was used. The magnetometer reading for each station was recorded on a gridded survey form representing the survey area. Control station readings were taken approximately every half hour to record any daily variation in the earth's magnetic field.

Research Results

Data Reduction

The earth's magnetic intensity varies through the day. Generally, the magnetic field intensity decreases during the morning, then increases throughout the afternoon. The variation is caused by sunspot activity, solar wind variations, atmospheric tides, and other factors that are not well understood. This diurnal variation must be measured and corrected in order to obtain high sensitivity during a magnetometer survey. The variation of the earth's magnetic field is measured by repeating magnetic readings at specified control stations during the survey. "If a smooth curve is drawn through the readings plotted as a function of time (every hour or so), these values can be subtracted from all other readings provided that each reading also includes the time at which it was observed" (Breiner 1973:12). However, if anomalies of interest are small (20 gammas) and can be traversed completely in less than 5 minutes, no time variation correction is necessary.

Another type of data manipulation is sometimes necessary because of an excessive amount of

geologic/magnetic "noise." When such a condition occurs, it is possible to apply simple smoothing techniques to eliminate the effect of the magnetic noise. Anomalies of very short wavelength can be caused by these surface magnetization contrasts. Reduction of this noise can be done manually by removing the peaks of plotted raw data. A more objective method is to apply a running average to the data.

In this study, the survey blocks were relatively small and could be completed in a short amount of time. In addition, all but one of the surveys recorded very small differences on the control station record. Consequently, it was considered unnecessary to correct for diurnal variations. On the other hand, one of the survey blocks (#1) contained a high degree of magnetic variation from one station to another. These sharp variations probably represented surface magnetization noise. In this case, the data profile was smoothed using the three-point running average method.

When the final corrected readings were available, a contour map was constructed to provide a basis for identifying magnetic anomalies. A contour interval of 5 gammas was used where possible. Experience has shown that a cultural feature, such as a hearth, may be undetected if a larger interval is used.

Interpretations

Survey Area 1. Magnetometer Survey Area 1 was located in an open area near the water's edge (Figure 24a). This area lies between and slightly north (landward) of the remnant brick wall sections that are in the shallow water of the river's edge. It was hoped that the magnetometer survey could detect buried remnants of the brick walls. A 10- x 20-m rectangular survey grid was established in an east-west orientation. Unfortunately, this area was also near the high water line of the river, which accounted for the muddy condition and presence of modern flotsam. All visible metal was removed before the survey, including a set of partially buried, rusty bed springs.

This area produced a number of magnetic anomalies in a very noisy background. Even after the data were manually smoothed, the resulting contour map indicated a lot of magnetic noise. Because of the uncertain interpretive value of the magnetometer record and the unusually high water table, test excavation at the anomaly locations was postponed.

After the field season had ended, a reappraisal of the magnetometer data from Survey Area 1 was conducted. The data were examined using a three-point running average program on a TI-59 programmable calculator. The new data points were plotted on a grid sheet, and a contour map was constructed. This contour map (Figure E-1) indicates a large linear anomaly in the northwest part of the survey block and a smaller linear anomaly in the southeastern portion. Both anomalies occur in a relatively steady background and contain the characteristic high and low gamma arrangement. These anomalies could represent a cultural feature, such as a section of a wall or foundation.

Survey Area 2. This survey block was situated just north (landward) of BHT 9 (Figure 24a). This location was chosen because of the appearance of dipping strata in BHT 9, which suggested the presence of a remnant moat. Test Unit 1 (a 3-m square) was to determine if the presumed moat extended to the north. A 5- x 10-m magnetometer survey grid was established prior to the placement of Test Unit 1. Test Unit 1 was located in the southwest corner of the east-west oriented grid.

Test Unit 1 covered a portion of the magnetometer grid where a small (10 gamma) magnetic high was located (Figure E-2). The magnetic low nearby may be part of the same anomaly-causing feature. The cause of the anomaly was apparently a large metal can lid discovered in the southern portion of the test pit at a depth of 57 cm below datum. This metal was in the uppermost soil zone, which represented a recent depositional episode. Other modern artifacts also were discovered in this soil zone.

Survey Area 3. This survey block was established prior to the excavation of Test Unit 2, a 3-m square situated between BHT 3 and 4 (Figure 24a). The purpose of this unit was to test for the presence of the possible east (upriver) moat as extrapolated from the apparent location of the possible west (downriver) moat. Although no evidence for the moat occurred in either BHT 3 or 4, Test Unit 2 was intended to investigate the interval between them.

The magnetometer survey consisted of a 5- x 6-m grid oriented east-west between BHT 3 and 4. The magnetic contour map did not indicate the presence of magnetic anomalies (Figure E-3). The rather sharp increase in magnetic intensity in the southern part of the survey area was produced by the proximity of a large metal pontoon that

had washed ashore approximately 10 m to the south. No metallic artifacts or evidence of a moat were discovered as a result of Test Unit 2.

Survey Area 4. Survey block 4 was located at Test Unit 5, which is approximately 15 m south (riverward) of BHT 8. Since a fort wall was suggested at BHT 8, this test unit was excavated in hopes of intersecting the extrapolated wall line (Figure 13). Survey area 4 consisted of a 5- x 20-m grid oriented in an east-west direction.

The data from the magnetometer survey were converted to a magnetic contour map (Figure E-4). This map indicates a rather large (40 gamma) magnetic high in the northcentral portion of the survey grid. Subsequent shovel testing at that location failed to determine the cause of the anomaly. Test Unit 5, a 1- X 2-m square, was excavated along the south central portion of the survey grid. No metallic objects were uncovered during the excavation of Test Unit 5.

Conclusions

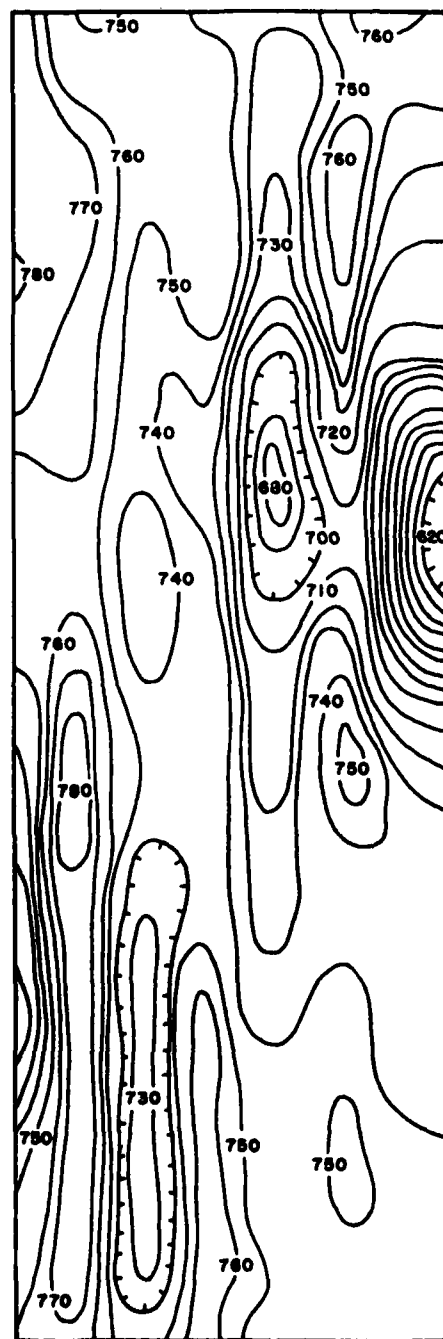
This preliminary assessment of micromagnetic surveying at Fort St. Leon (16PL35) indicates the potential utility of the method. The test excavations, in conjunction with the magnetic survey, provided data necessary for evaluating the efficacy of the method at this site. In one area where no magnetic anomalies occurred, no cultural features were found in excavation. In another area where a small anomaly occurred, it could be attributed to buried modern metallic trash.

The most important result of the magnetic survey could be associated with Survey Area 1. The linear aspect of the two anomalies suggest the presence of a buried feature such as a section of chimney, wall, or foundation. Future work at the site should include test excavations at the anomaly locations to determine the cause of the anomaly. In addition, other areas of the site should be subjected to magnetic survey to locate any other similar anomalies.

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16 PL 35
Survey No. 1



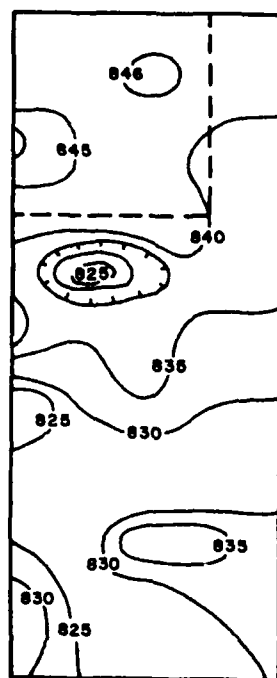
Enclosed Low Reading



CONTOUR INTERVAL 10 GAMMA

Figure E-1. Magnetometer contour map of Survey Area 1.

16 PL 35
Survey No. 2



Test Unit 1

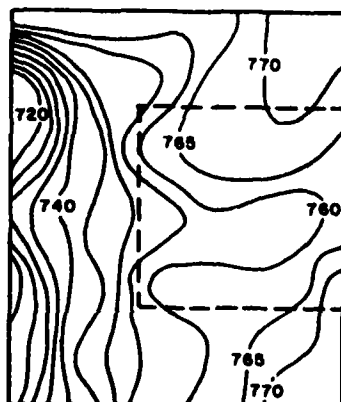
N

0 1 2 3 4 meters

CONTOUR INTERVAL 5 GAMMA

Figure E-2. Magnetometer contour map of Survey Area 2.

16 PL 35
Survey No. 3



Test Unit 2

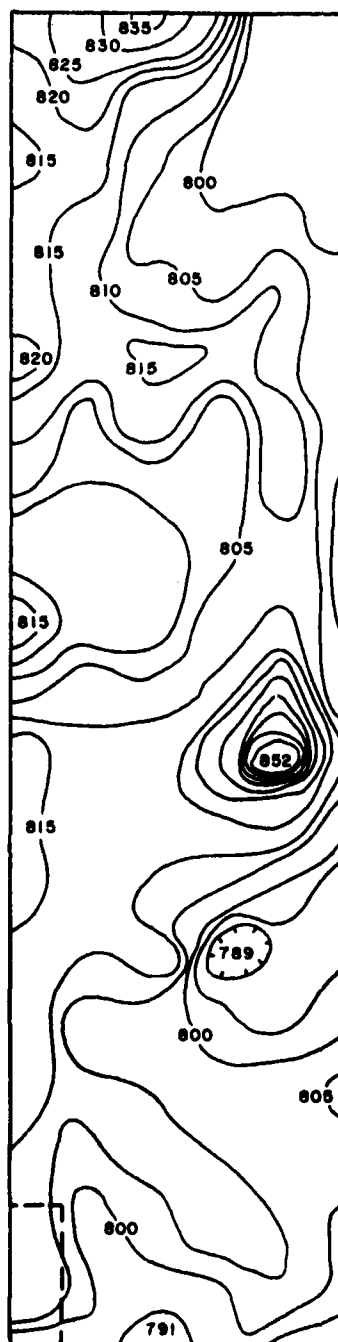
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0 1 2 3 4 meters

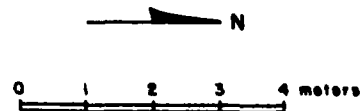
CONTOUR INTERVAL 5 GAMMA

Figure E-3. Magnetometer contour map of Survey Area 3.

16 PL 35
Survey No. 4



 Test Unit 5



CONTOUR INTERVAL 5 GAMMA

Figure E-4. Magnetometer contour map of Survey Area 4.

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ARCHAEOLOGICAL TESTING AT FORT ST. LEON (16PL35)
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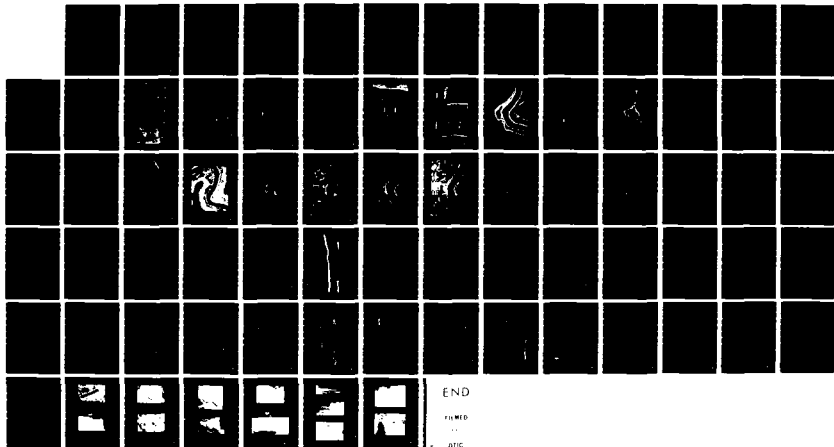
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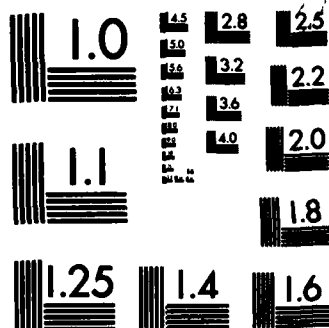
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE 1. VEGETATION IN THE PROJECT AREA

COMMON NAME	SCIENTIFIC NAME	FREQUENCY
Coastal willow	<i>Salix caroliniana</i>	abundant
Poison ivy	<i>Rhus radicans</i>	abundant
cf. Water hemlock	<i>Cicuta maculata</i>	common
Eastern cottonwood	<i>Populus deltoides</i>	common
cf. Basswood sp. (carolina)	<i>Tilia caroliniana</i>	occasional
Great ragweed	<i>Ambrosia trifida</i>	common
cf. Climbing boneset or hempwood	<i>Mikania scandens</i>	common
cf. Pumpkin ash	<i>Fraxinus profunda</i>	occasional
cf. Poison oak	<i>Rhus toxicodendron</i>	occasional
Boxelder	<i>Acer negundo</i>	common
Polkweed	<i>Phytolacca americana</i>	occasional
Groundnut	<i>Apios americana</i>	rare
Cocklebur	<i>Xanthium strumarium</i>	occasional
Sycamore	<i>Platanus occidentalis</i>	common
cf. Spurred butterfly pea	<i>Centrosema virginianum</i>	occasional
Trumpet creeper	<i>Campsis radicans</i>	occasional
Morning glory sp.	<i>Ipomea</i>	common
Day flower	<i>Commelina communis</i>	common
cf. Smartweed sp.	<i>Polygonum</i>	abundant
Sedge	<i>Scirpus</i>	abundant
Elephant ears	<i>Caladium</i>	common
Sugarberry	<i>Celtis laevigata</i>	rare
Lyonia	<i>Lyonia ferruginea</i>	rare
Indigo	<i>Baptisia</i>	occasional
cf. Ageratum	<i>Eupatorium</i>	occasional
Red mulberry	<i>Morus rubra</i>	rare
Greenbriar	<i>Smilax</i>	common
Hackberry	<i>Celtis occidentalis</i>	common
Ferns	<i>Pteridium aquilinum</i>	common
Wild lettuce	<i>Lactuca serriola</i>	abundant

TABLE 2. ARCHIVAL MAPS AND PLANS

The following is a list of documents used in spatial analysis of features on the west bank of English Turn. They are listed in chronological order and include a brief description and aquisition source.

- ca. 1723 Map of concessions above and below New Orleans showing Trépagnier concession. Courtesy of the Newberry Library, Chicago (Figure 4)

- 1747a Deverges, first map of English Turn showing locations and plans (insets) of the two batteries and the Prévost habitation. Carte de la partie du fleuve St. Louis nommée le Detour aux Anglais, avec les plans de deux batteries de canon. No. 64B, Section Outre-mer, Archives Nationales, Paris (Figure 1).

- 1747b Deverges, second map showing locations, profiles, and detail of projected fort construction at English Turn. Carte de la partie du fleuve St. Louis are Détour aux Anglais, avec les plans et faire. D.F.C., Louisiana, No. 55A, Section Outre-mer, Archives Nationales, Paris (Figure 2).

- 1749 DeBatz, plan of the north fort and adjacent
(April 9) plantation. Map Division, Library of Congress, Washington, D.C. (Figures 3 and 3a).

- 1754 Amelot, plan of New Orleans and the forts at English Turn. Archives Nationales, Paris (Figure 5).

- 1764 Course of the St. Louis River (Mississippi) from its mouth to Houmas, LA with English Turn identified. Le petit atlas maritime by Nicolas Bellin, Vol. 1, No. 43, Paris.

- 1765 Lieut. Ross, map of Louisiana; detail of English Turn showing Fts. St. Leon (19 guns) and St. Mary (21 guns) Historic New Orleans Collection (Figure 28).

- 1805 B. Lafon, map recording sale by heirs of C. Larch to Wm. Stackhouse, includes sketch of the property with dimensions and indicates the "levée of the batterie." Shenkel et al. 1978 (Figure 29).

Table 2 continued...

- 1805-06 Lafon, map of southern Louisiana. Louisiana under the rule of Spain, France, and the United States, Vol. 2 by J.A. Robertson (ed.), 1911.
- 1809 Maj. MacRea, plan of the American fort at English Turn. Cartographic Division, National Archives (Figure 7).
- 1813a Lafon, plan and statement of the works for the projected fort at English Turn, Historic New Orleans Collection (Figure 8).
- 1813b Lafon, map of English Turn and vicinity showing the location of the American fort and adjacent plantation on the north bank Woodsville, Morgan, and Trémés (sic) on the south bank, scaled at 1" = 2000'. Historic New Orleans Collection (Figure 9).
- 1813(?) (Sept. 25) Sale by Syndics of creditors of John Grieve to Benjamin Morgan in front of John Lynd, Notary Public. Betsy Swanson, Santa Fe.
- 1815 Ludlow, plan of the Battle of New Orleans showing Fort St. Leon. Les dernières années de la Louisiane française by Mari de Villiers du Terrage (1904), Paris.
- 1816 Latour map of British fortifications on the Mississippi, also showing Fort St. Leon. Historical memoir of the war in West Florida and Louisiana 1814-15 by Arsene Lacarriere Latrou (1816), Philadelphia.
- 1817 Gen. Bernard, plan of Fort St. Leon drawn by W.T. Poussin, including profiles. Drawer 133-13, Map Division National Archives, Washington, D.C. (Figure 10).
- 1830 Township and range plot T.14S-R.25E. southeastern district west of Mississippi River surveyed by Maxwell and Cobb. General Land Office, Baton Rouge (Figure 30)
- 1853 Township and range plot T.14S.-R.25E. southeastern district west of Mississippi River shows Fort St. Leon "in ruins." General Land Office, Baton Rouge.

Table 2 continued...

- 1863 Maj. D.C. Houston, map (detail) of the military approaches to New Orleans showing "Old" Fort St. Leon and J. Villere property, as well as the Confederate Fort and Cutoff Road. Cartographic Division National Archives, Washington, D.C. Figure 14).
- 1864 Maj. D.C. Houston, proposed fortification at
(Feb 17) English Turn by J. Deutsch E.C. Drawer 133-64. Cartographic Division, National Archives, Washington, D.C.
- 1873 Mississippi River Commission, map of English Turn area showing "Old Spanish Fort St. Leon" opposite Shingle Point and other plantations. Tulane Library, New Orleans.
- 1877 T.S. Hardee, sections of map of Louisiana showing coast plantations below New Orleans and location of Eads Jetties at South Pass. Library of Congress, Washington, D.C.
- 1878 United States Coast Survey, map (detail) of Mississippi River, Louisiana (Sheet No. 6) from Stella Plantation to Powder House including English Turn, shows "Old Spanish Fort St. Leon and Cutoff Road. U.S. Coast Survey (Figure 15).
- 1882 Mississippi River Commission Sheet 29, reduced from the original maps of the U.S. Coast Survey showing "Old Spanish Fort St. Leon," Cutoff Road, Planter's Canal and various plantations. Tulane Library, New Orleans.
- 1884 U.S. Coast Survey, map of the Mississippi River, Louisiana detail shows "Fort Leon", Cutoff Road, N.O.J. and G.I. Railroad, as well as various plantations. Tulane Library, New Orleans (Figure 16).
- 1885 State of Louisiana, Department of Public Works survey (#1315) of Upper Magnolia levee, Plaquemines Parish, later called Fort Leon levee. Dept. of Public Works, Baton Rouge.
- 1887 U.S. Coast and Geodetic Survey, map of Mississippi River, Louisiana, (Chart #195), detail shows N.O.J. and G.I. Railroad (labeled) and Cutoff Road (unlabeled), but Fort St. Leon is not indicated. Tulane Library, New Orleans.

Table 2 continued...

1889	State of Louisiana, Department of Public Works survey (#1352) of Fort Leon leveés in two sections. Dept. of Public Works, Baton Rouge (Figure 31).
1893a (June 1)	Mississippi River Commission, 4th District, Barataria and Lake Borgne levee districts' location of leveés built by United States during season of 1892-1893, showing Upper and Lower Fort St. Leon levees among others <u>Annual report of the Chief of Engineers, U.S. Army, to the Secretary of War for the Year 1893, Part V, Washington, D.C.</u>
1893b (March)	Mississippi River Commission's survey of the Mississippi River, Chart No. 77, detail showing leveés and plantations along English Turn including Fort St. Leon Plantation (A. Bruland), "Old Fort St. Leon," and Cutoff Road, Mississippi River Commission, Vicksburg.
1895	Map of English Turn (detail) shown Fort St. Leon Plantation, Orleans/Plaquemines Parish line and other property, Betsy Swanson, Santa Fe (Figure 17).
1912 (August)	R.S. Daniels, map of a portion of Belle Chasse Plantation (Larche habitation) showing Cutoff Road, Planter's Canal, and the lower limit of the Fort St. Leon Plantation (Dupard property line). New Orleans National Archives (Figure 23).
1921	Louisiana State Highway, plan and profile of proposed State Hwy., New Orleans to Ft. Jackson, Belle Chasse to Magnolia. Plaquemines Parish Court House, LA.
1921	Mississippi River Commission, maps to levee construction. Waterways Experimental Station, Vicksburg, Mississippi.
1935	Board of State Engineers of Louisiana continuous survey of Latourche Basin Levee District below New Orleans, Plaquemines Parish showing levees and section lines. Dept. of Public Works, Baton Rouge.
1939	USGS, Chalmette 7.5 Quadrangle. New Orleans Public Library.

Table 2 concluded.

- 1940 U.S. Army Corps of Engineers proposed levee work, Barataria Levee District, 1st area, Fort St. Leon levee, new and enlargement. Dept. of Public Works, Baton Rouge.
- 1942 U.S. Army Corps of Engineers, Louisiana St. Bernard 15' Quadrangle, Grid Zone C, No. 137266. Army Map Service, New Orleans District COE.
- 1945 U.S. Army Corps of Engineers plan of Barataria Levee District, Station 122 to 182, based on aerial photographs taken May 1945 (File no. H-25-13606/3). New Orleans District COE (Figure 32).
- 1972 USGS Chalmette (La) 7.5 Quadrangle (various figures).
- 1973 USGS, St. Bernard (La) 15' Quadrangle.
- 1977 U.S. Army Corps of Engineers comprehensive evaluation of archeological resources at English Turn, Plaquemines Parish, La., Mississippi River levees M-78.0-R. Prepared by the Archeological Research Program, Dept. of Anthropology and Geography, University of New Orleans, New Orleans, La.,
- 1977 Shenkel, Beavers, Swanson, and Gagliano, Map of Record for Fort St. Leon. Shenkel et al 1977.

TABLE 3. LIST OF AERIAL PHOTOGRAPHS EXAMINED

DATE	TYPE	SCALE (1"=)	SCALED TO TOPO (1"=2000')	SCALE OF ENGLMT (1"=)	SOURCE
1933	B-W	833.3'	X	n.d.	COE
Dec 1943	B-W*	1600'	X	509'	NA
May 1945	B-W*	1600'	X	-	NA
1951-T	B-W	2000'	X	1018'	†
Oct 1951	B-W*	4166'	-	1018'	NA
Feb 1954	B-W*	1867'	-	-	NA
Jan 1954	B-W	1867'	-	-	NA
Oct 1965	B-W	2240'	X	861.5'	USGS
Oct 1966	B-W series	166.7'	-	100'	COE
May 1970	Color, IR		-	-	NASA
1975	Color, IR		-	1600'	NASA
1978	B-W		X	1600'	USGS
1981	B-W	833'	X	-	COE

NA = National Archives

COE = Corps of Engineers

NASA = National Aeronautics and Space Administration

USGS = U.S. Geological Survey

† = Tobin (courtesy of Valero Energy Corporation)

* = Stereo pair

TABLE 4. SOIL CHEMISTRY

LOCATION OF SAMPLE	ORGANIC CONTENT %	pH
BHT 18 SE end	2.53	7.67
BHT 8 S wall (35-49 cm BS)	3.71	6.84
TU #4 Matrix (158 cm BTB)	3.72	6.78
TU #3 Matrix (150 cm BTB)	4.96	7.08
BHT #8 W wall (33-43 BS)	4.40	7.25

BS = Below surface

BTB = Below temporary datum

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General Plan of the North Fort at English Turn, such as it is presently, 1749.

- A. Great Battery
- B. Works built in the year 1747
- C. Works which remain to be done
- D. Sentry box
- E. Epaulement
- F. Barbette battery with four pieces of cannon
- G. Small levees
- H. Ditches at the periphery [?] of the Retrenchment
- I. Enclosure of the said retrenchment, built in the year 1748 with palissades 6 inches square in size and twelve feet long, pointed at the top one foot and at the bottom which is in the ground, blackened at the fire, the said enclosure pierced with 387 loopholes for gun fire.
- K. Embrasures for 24 pieces of cannon
- L. Gate and bridge of the town
- M. Gate and bridge of the woods
- N. Gate and bridge of the advanced battery
- O. Banquette adjoining the palissades
- P. Hexagon shaped sentry box
- Q. Ditches for the drainage of water
- R. Place d'Armes
- S. Guard houses
- T. Kitchens
- U. Bakery
- V. Barracks
- X. Storehouses for provisions
- Y. Storehouse for powder and artillery
- Z. Small levees
- &. Ditch of the King
- ξ. Landing place bridge

Legend of the Plantation

- | | |
|----------------------------------|-----------------------------------|
| a. House where troops are lodged | k. Sheep pen |
| b. Kitchen | l. Commander's cabin |
| c. Place for drying indigo | m. Gate and road from New Orleans |
| d. Chicken house | n. Negro camp |
| e. Barn | o. Fig trees |
| f. Stable | p. Cow pens |
| g. Joinery, carpentry | q. Land for putting in the grains |
| h. Forge | |
| i. Bakery | |

Drawn up and done on the spot, the 12 April, 1749.
DeBatz

Figure. 3a. Translations for Fig. 3

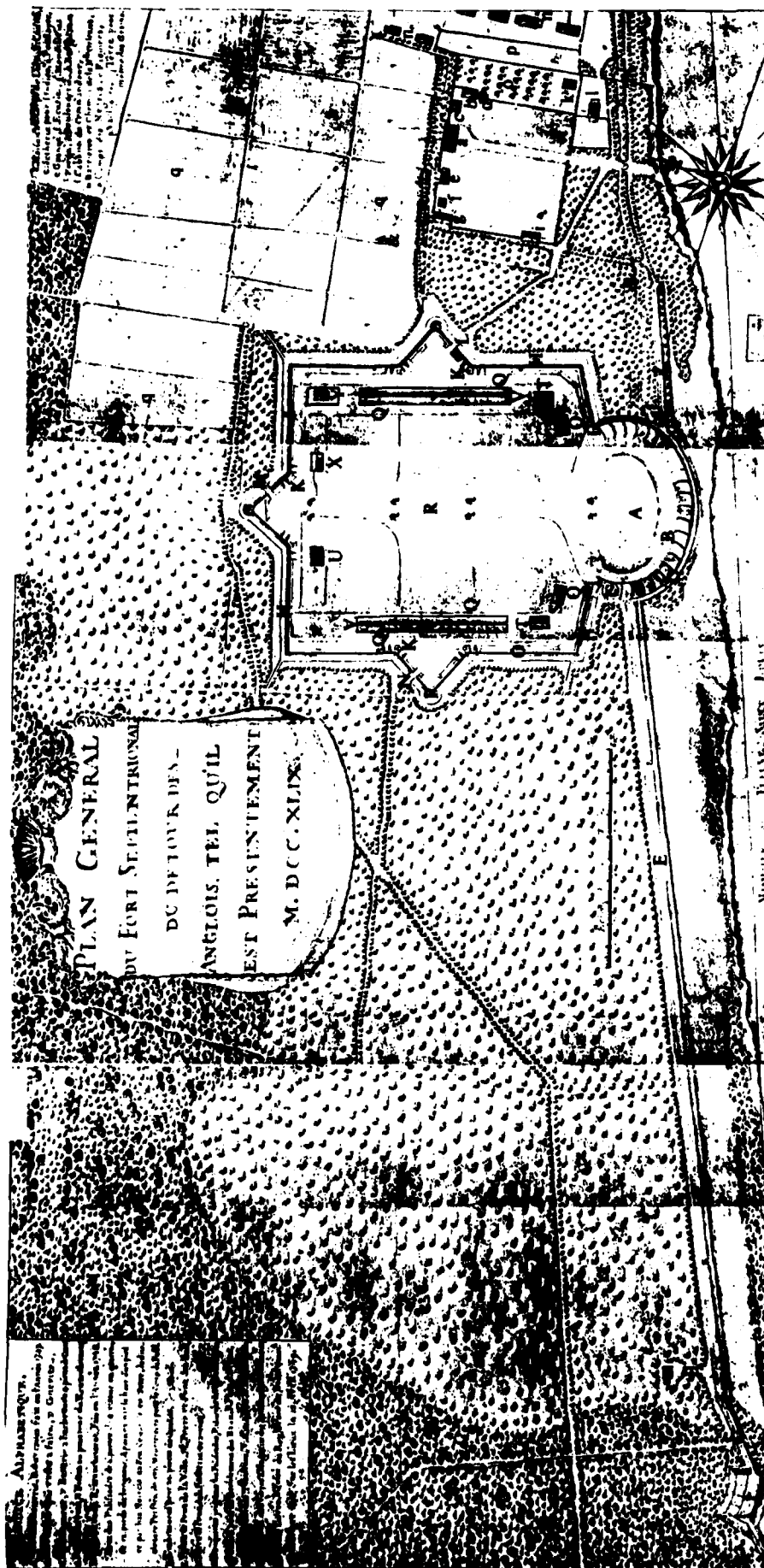


Figure 3. Plan of the North Fort at English Turn, 9 April 1749 by DeBatz (Map Division, Library of Congress).



Figure 4. Map showing concessions along the Mississippi River ca. 1723 (Courtesy Newberry Library, Chicago).

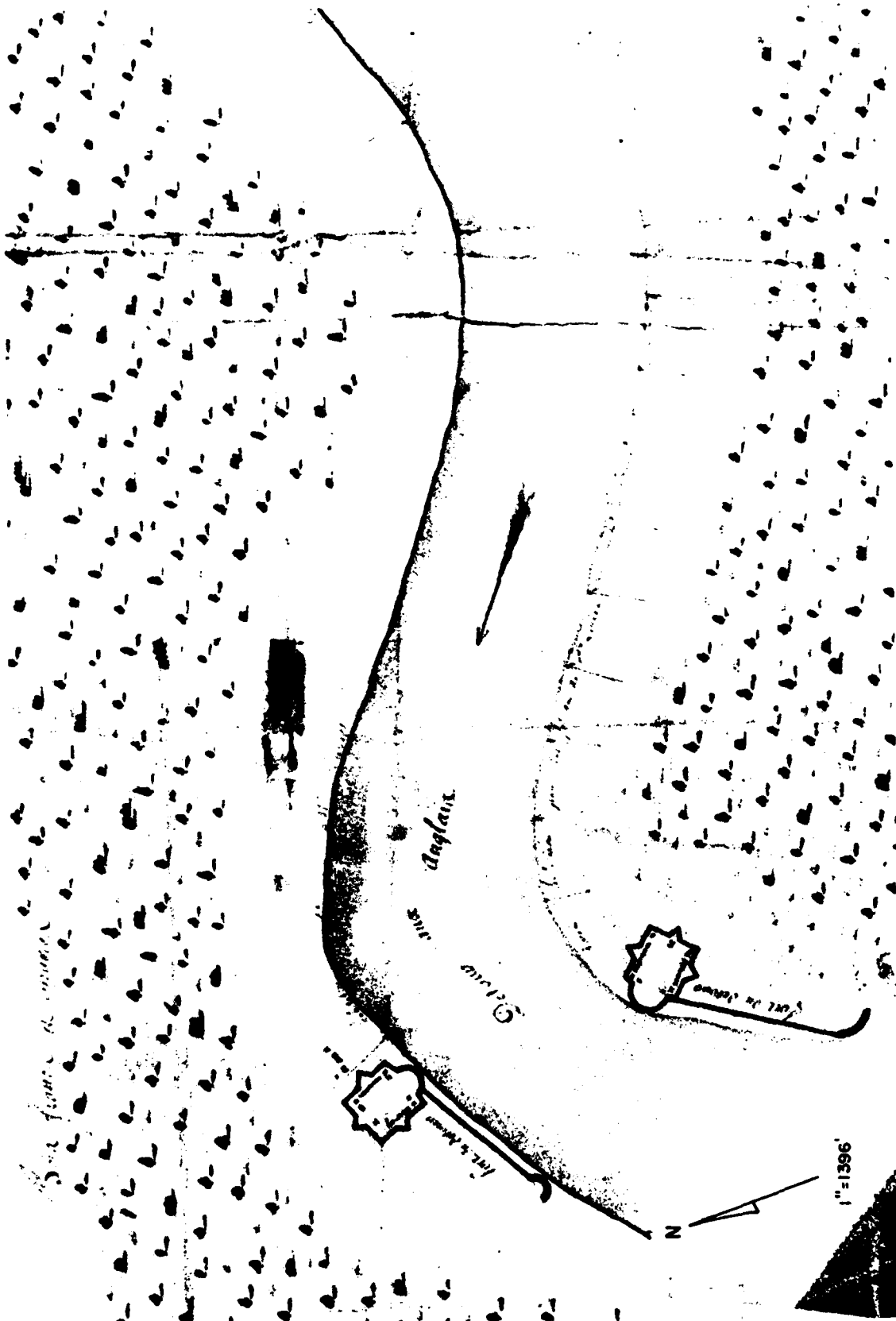


Figure 5. Plan of New Orleans and the forts of English Turn by Amelot, 1753.

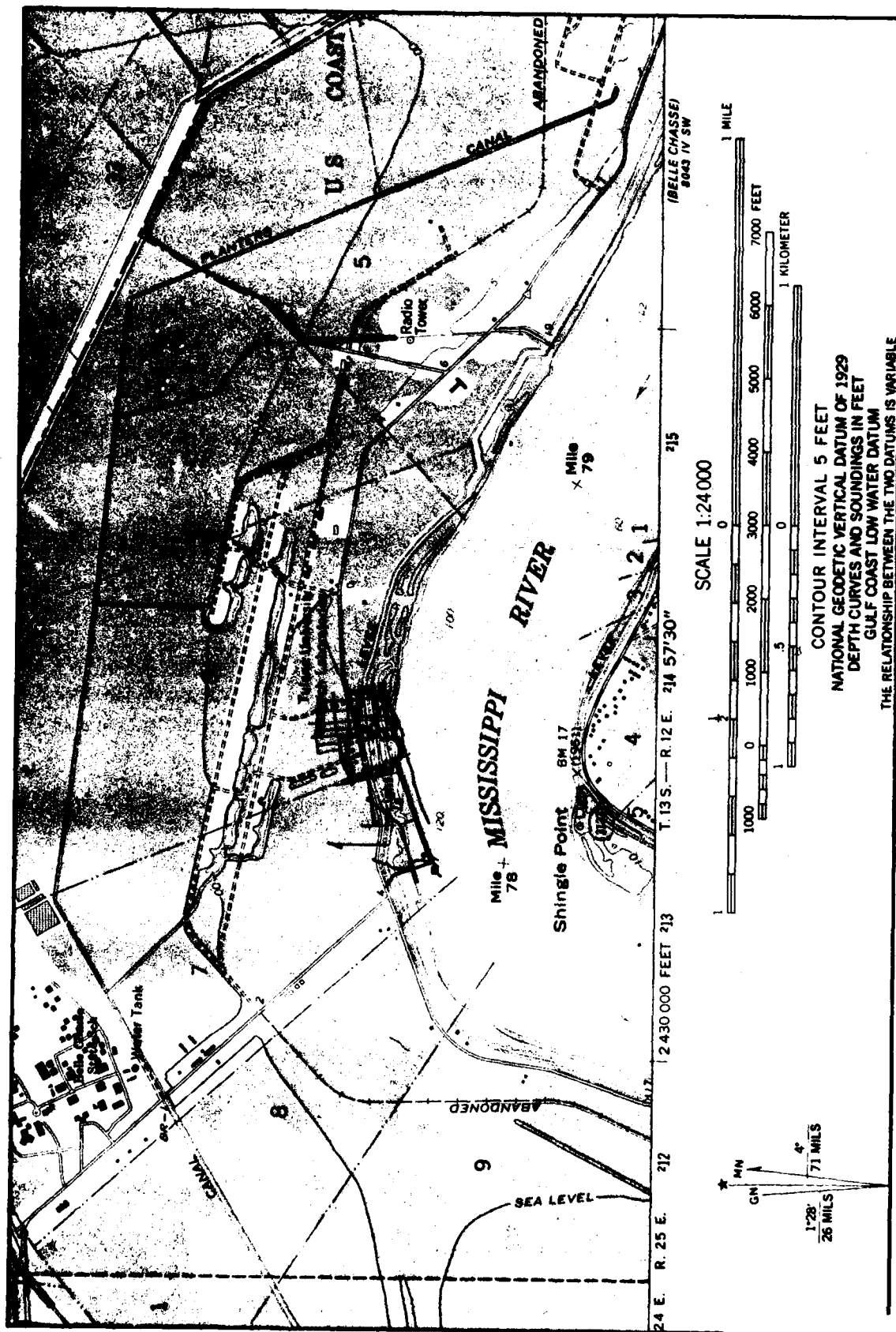
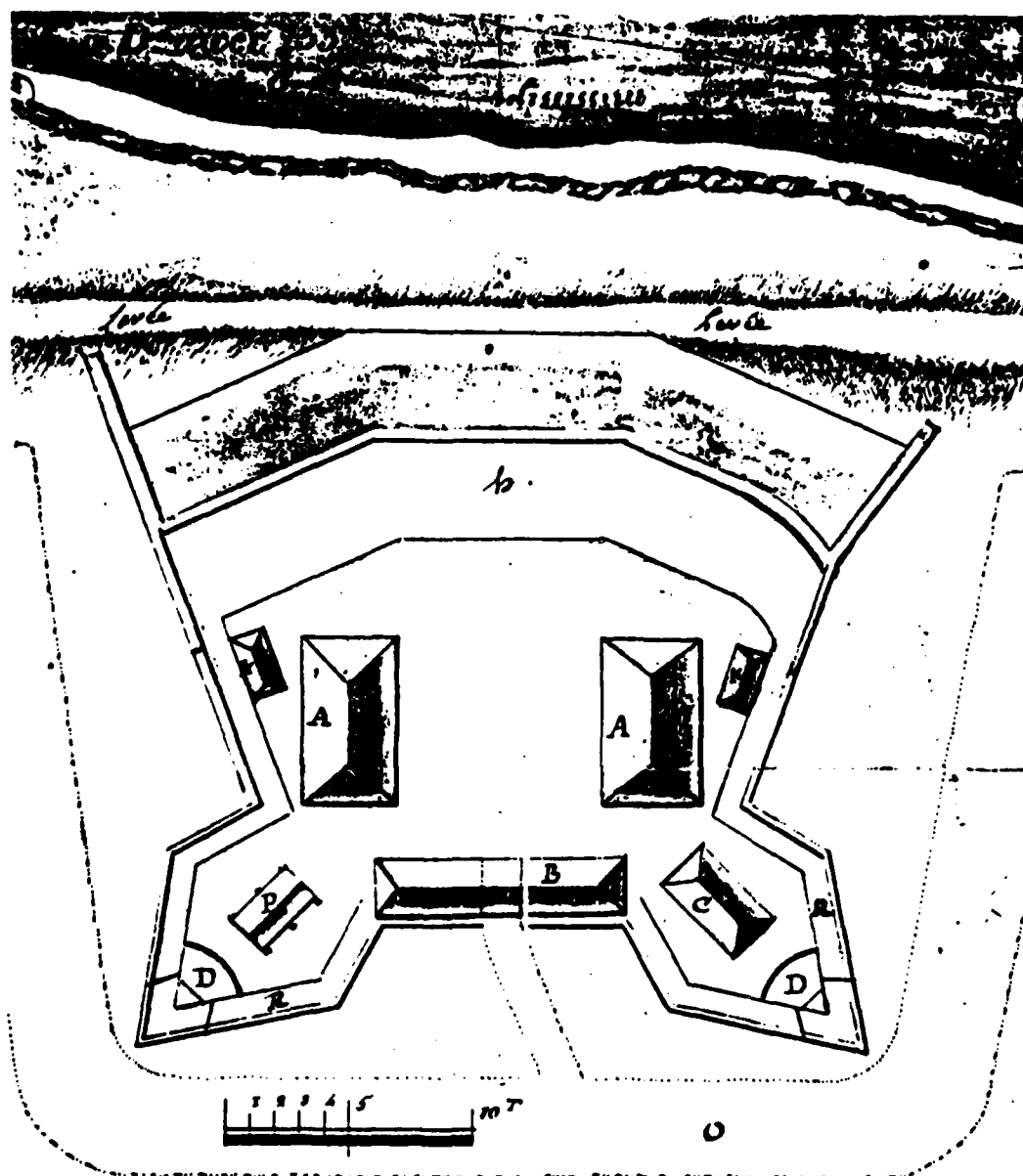


Figure 6. Overlay of 1749 Plan over 1772 Chalmette Quadrangle.



- A. Barracks
- B. Guard House and Store
- C. Officers' Quarters
- D. Barbet {sic} battery for a small canon {sic}
- P. Powder Magazine
- O. Road to be made
- H. Barbet {sic} battery for_(?) canons {sic}
- K. Kitchen
- R. Raised Way for the Musket fire.

Figure 7. Plan of the Fort at English Turn
by Major McRea, 1809.

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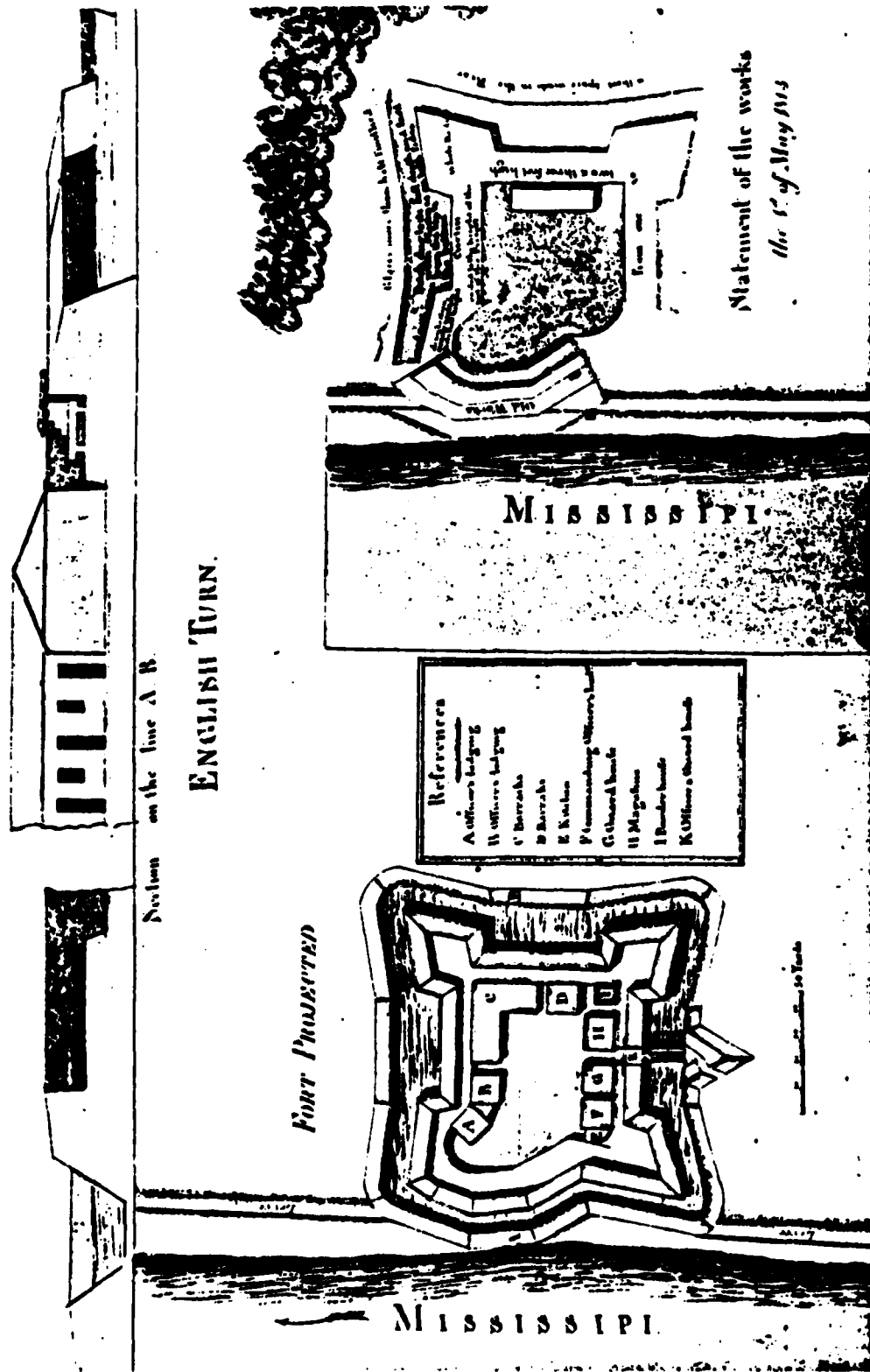
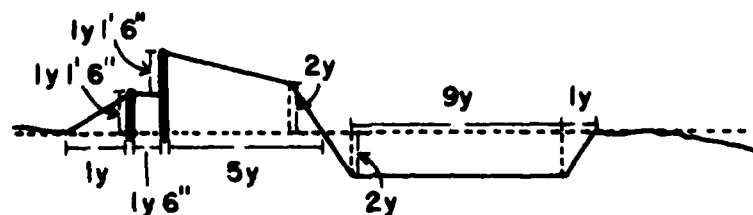


Figure 8. Statement of the Works and Fort Projected at English Turn by Barthelemy LaFon, 1813 (Historic New Orleans Collection).

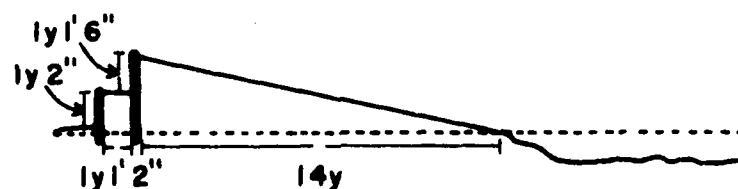


Figure 9. Plan of the English Turn, Bartholomew Lafon, 1813 (Historic New Orleans Collection).

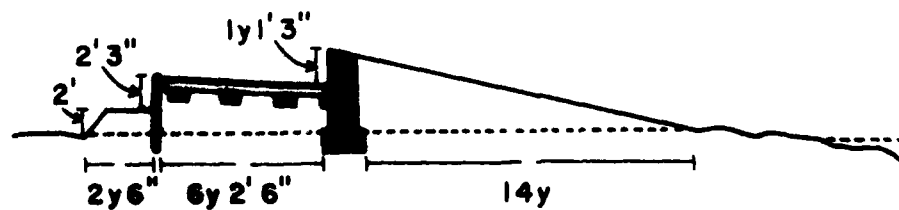
Profile on the line EF



Profile on the line CD



Profile on the line AB



Scale of the Profiles



Figure 10a. Enlargement of profiles from Figure 10.

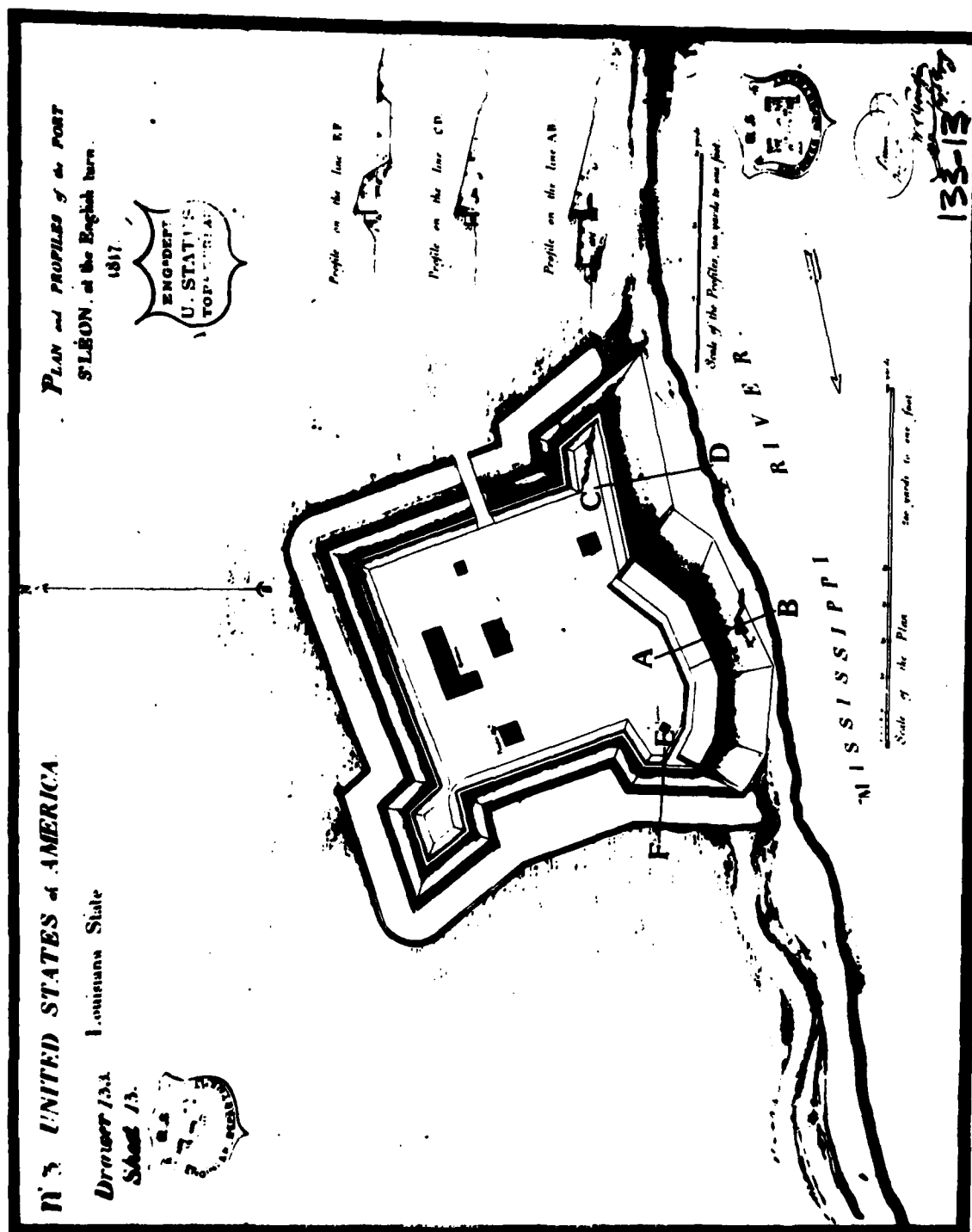


Figure 10. Plan and profiles of Fort St. Leon, 1817.

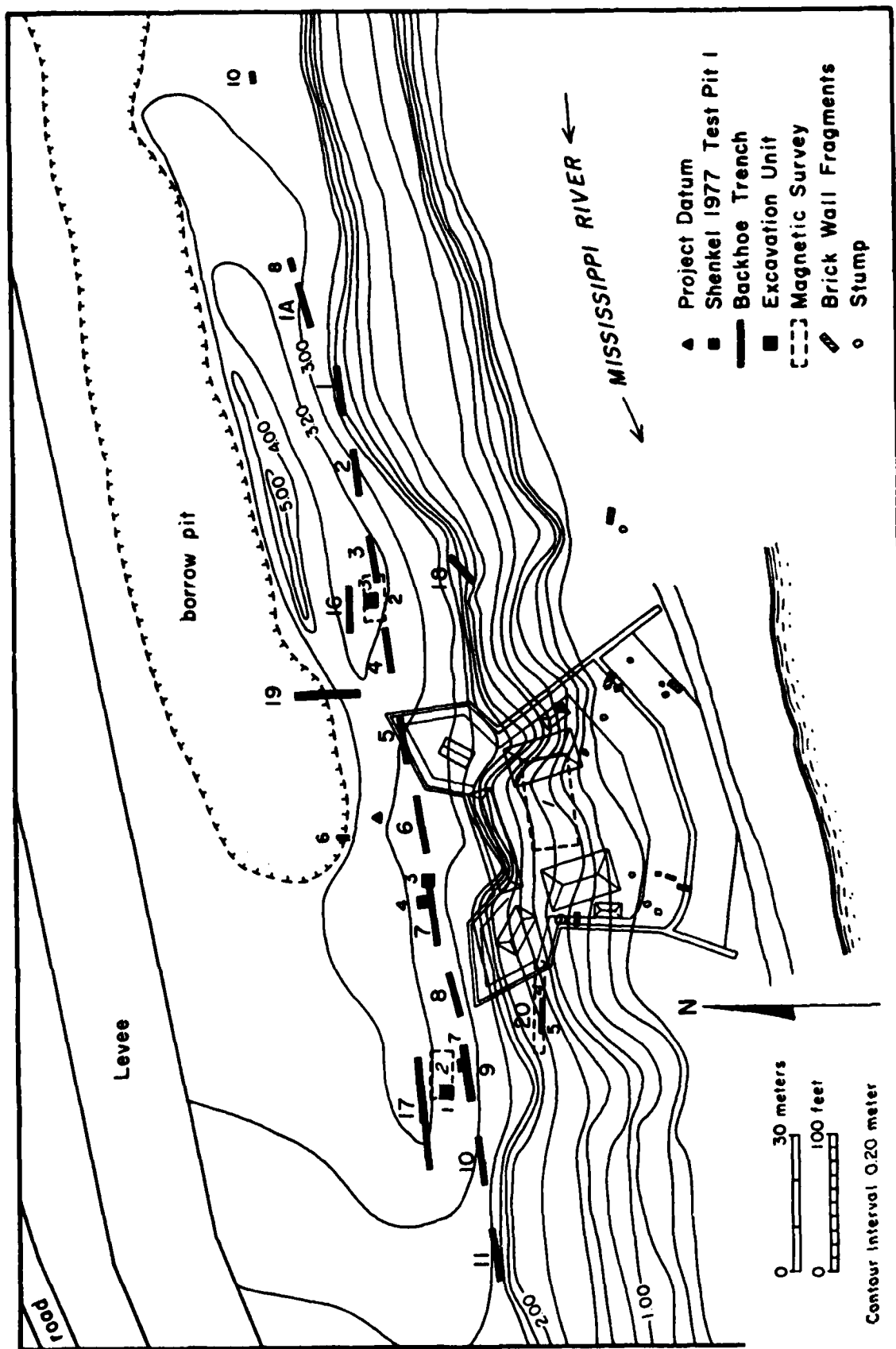


Figure 11. Overlay of 1809 plan on Project map.

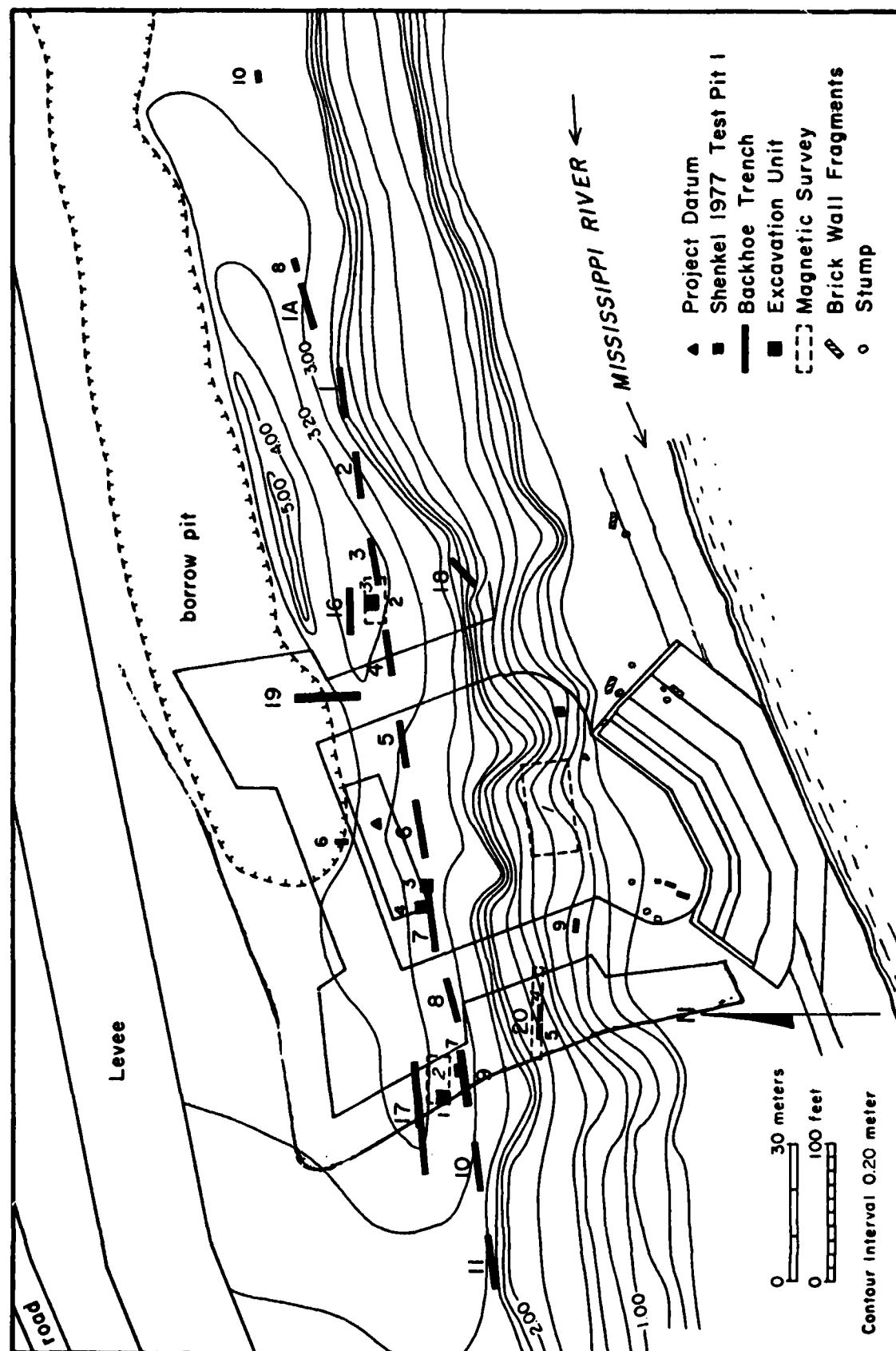


Figure 12. Overlay of the 1813 plan on Project map.

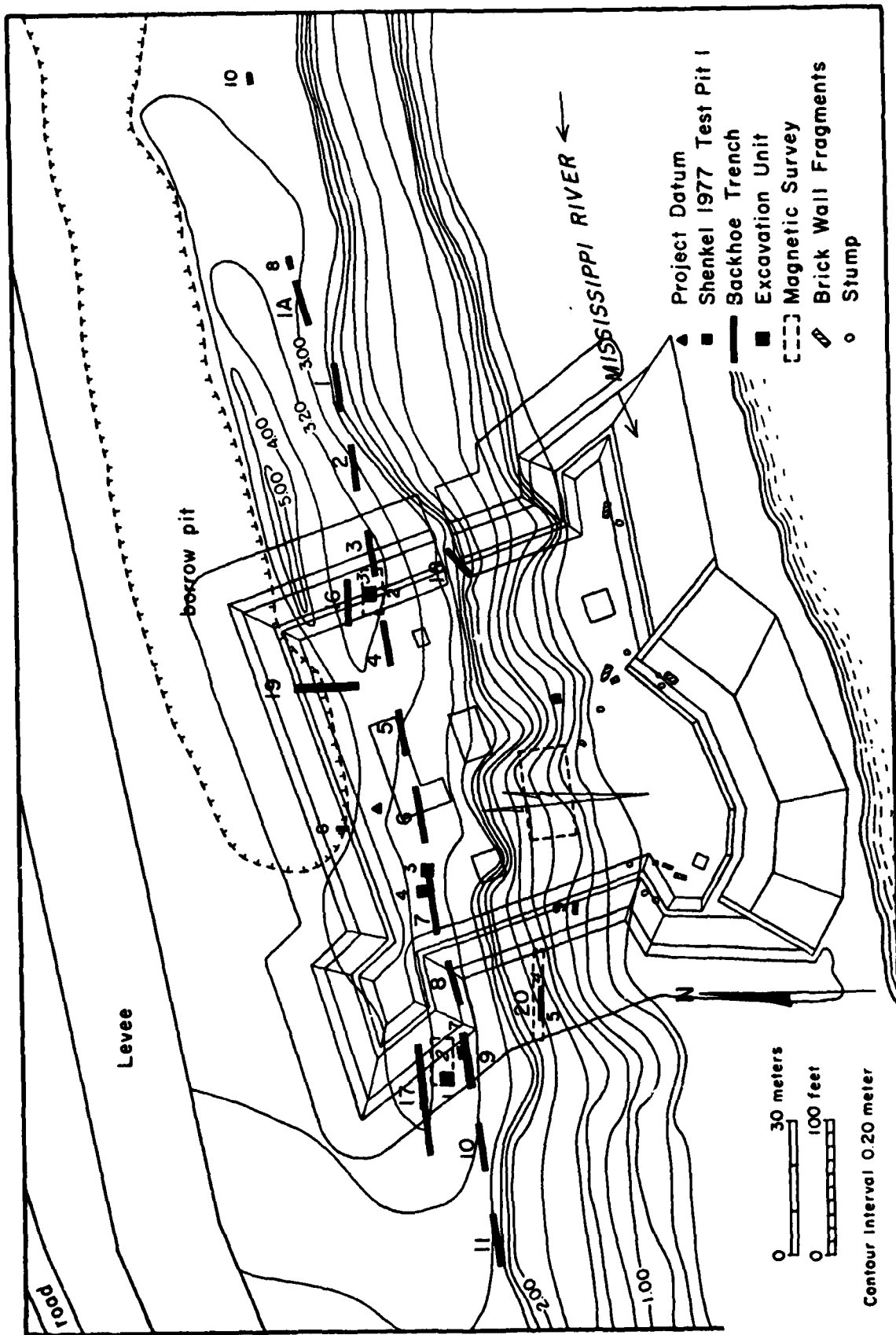


Figure 13. Overlay of the 1817 plan on Project map.

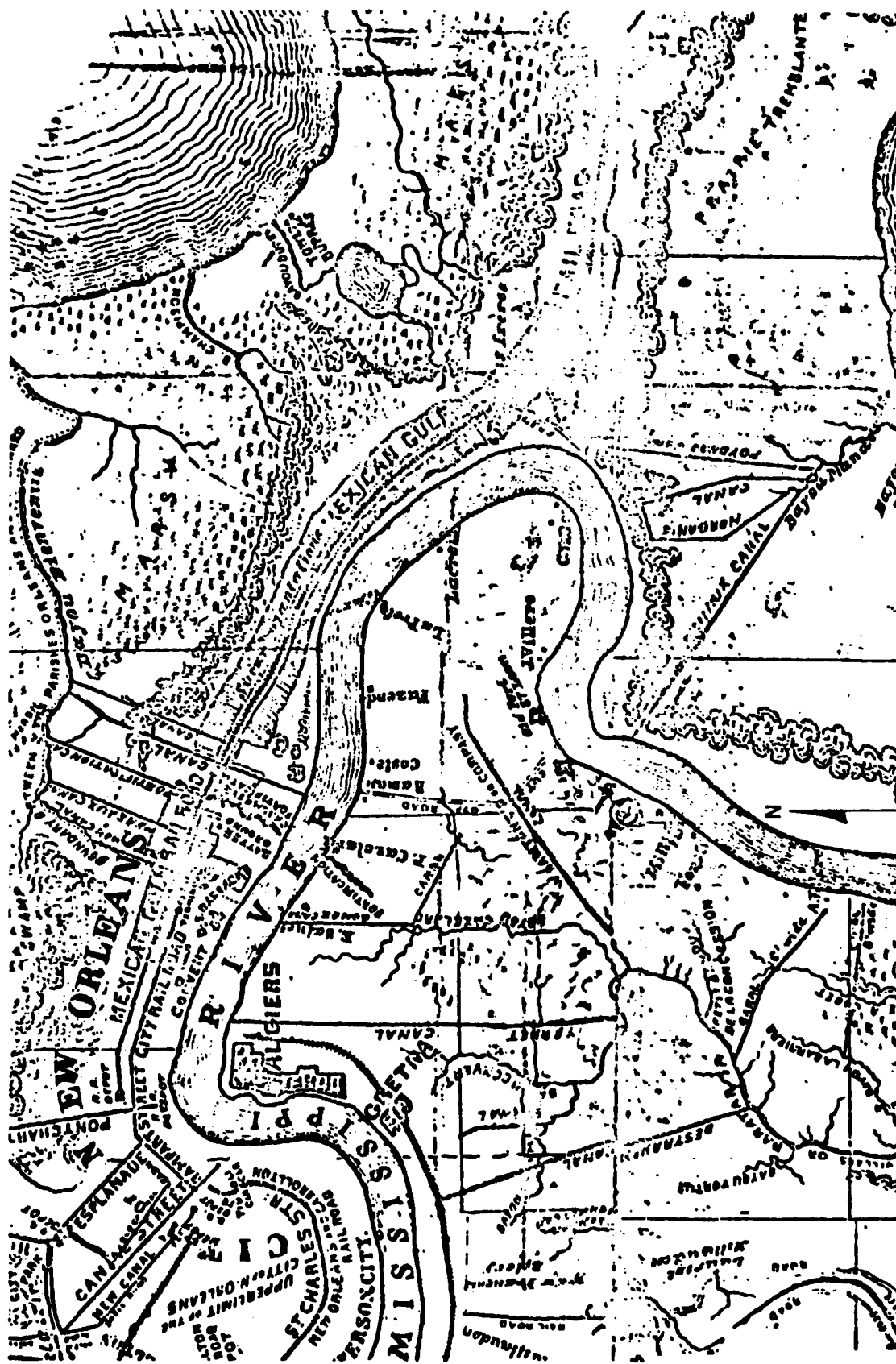


Figure 14. Military approaches to New Orleans, by Maj. D.C. Houston, 1863.

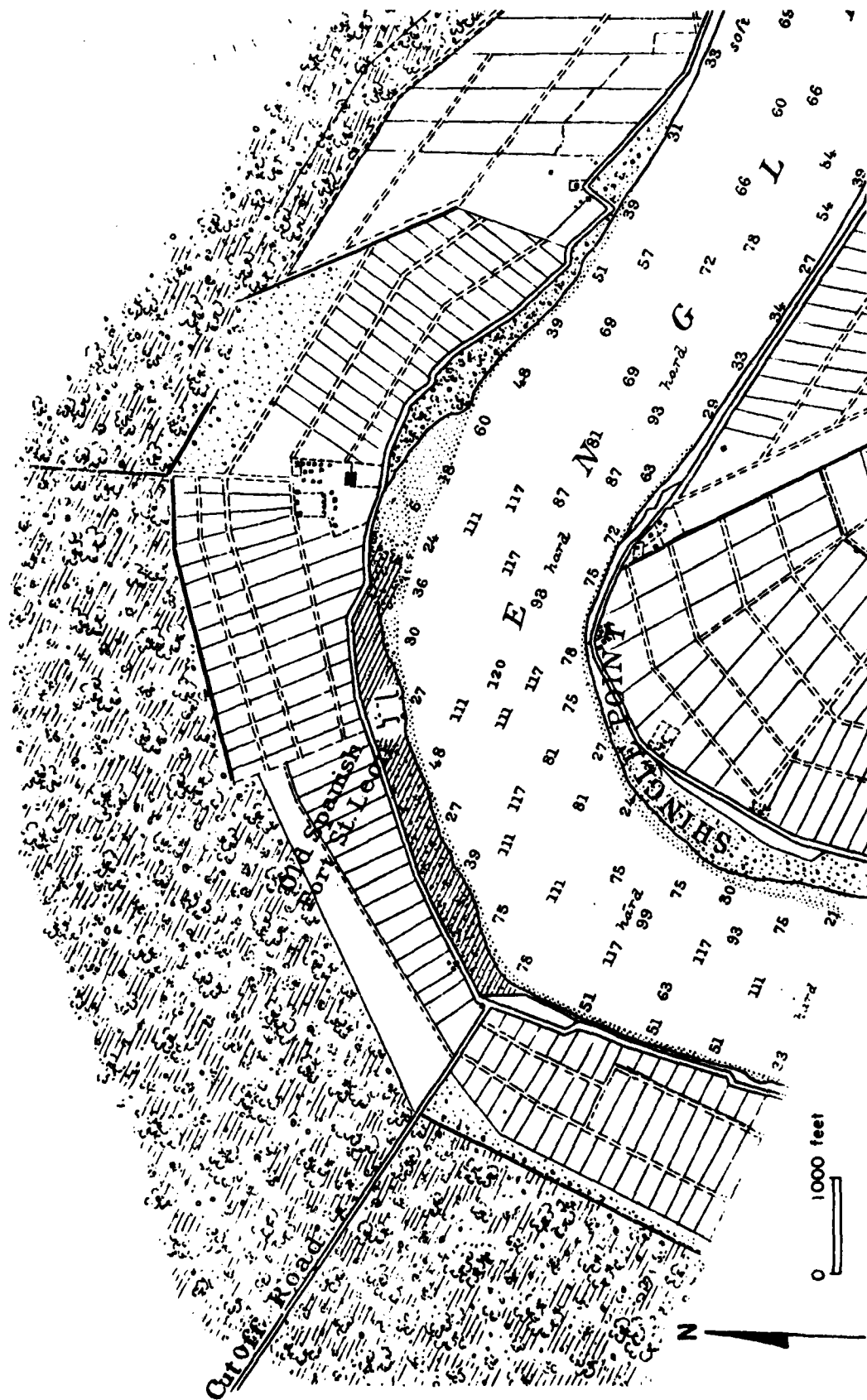


Figure 15. Mississippi River, 1878 (Detail).

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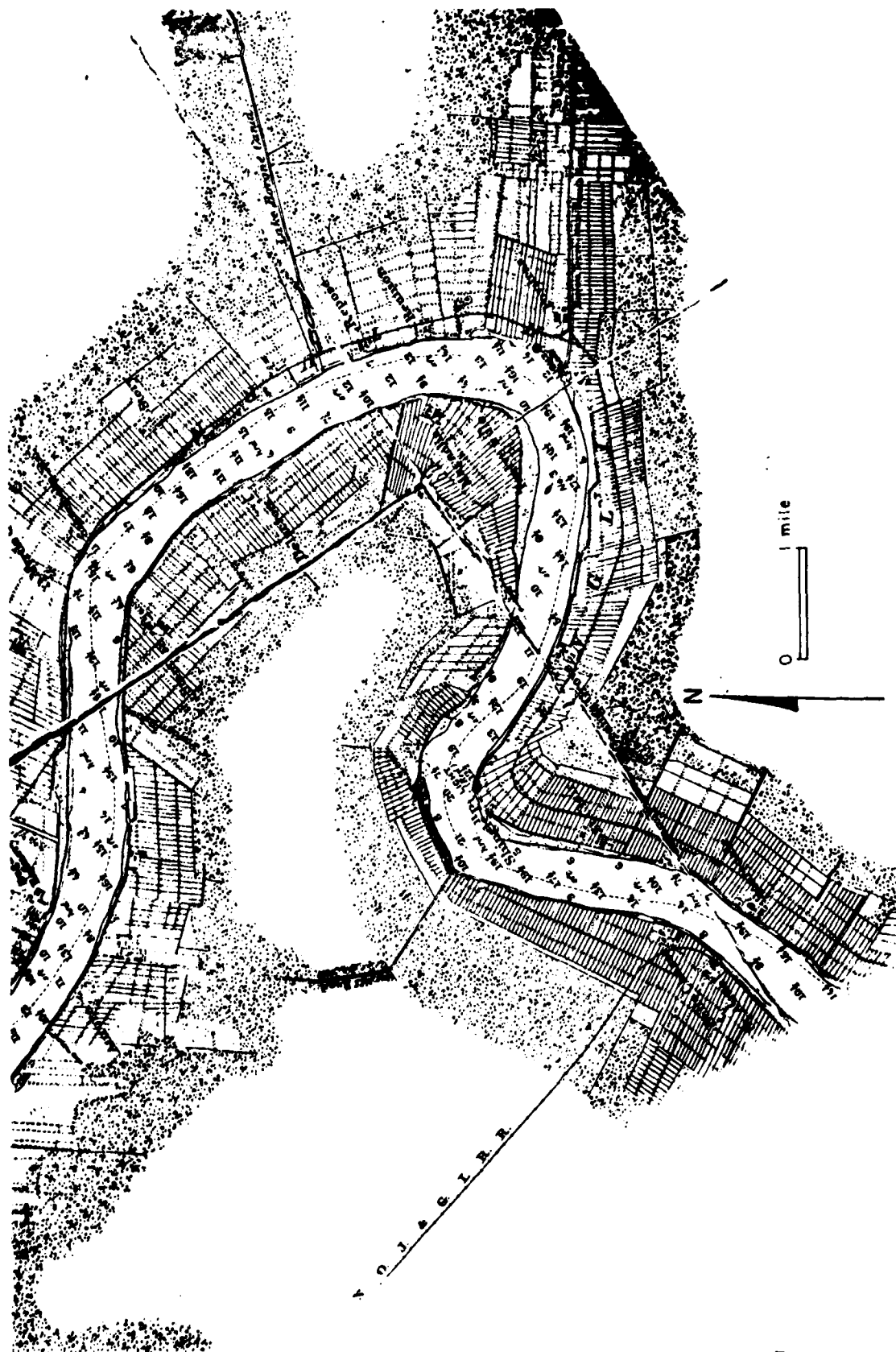


Figure 16. Mississippi River, 1884.

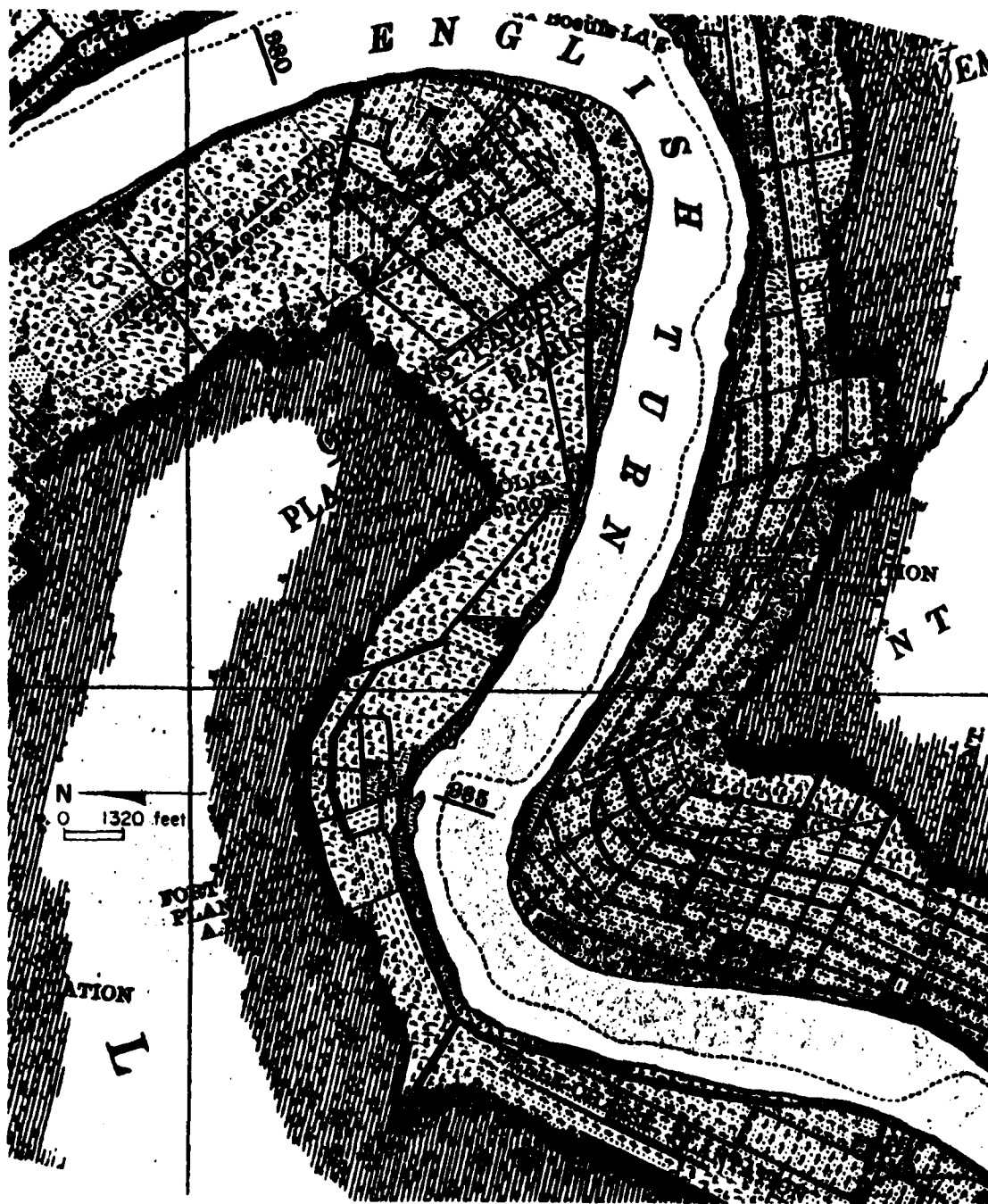


Figure 17. Mississippi River, 1895.

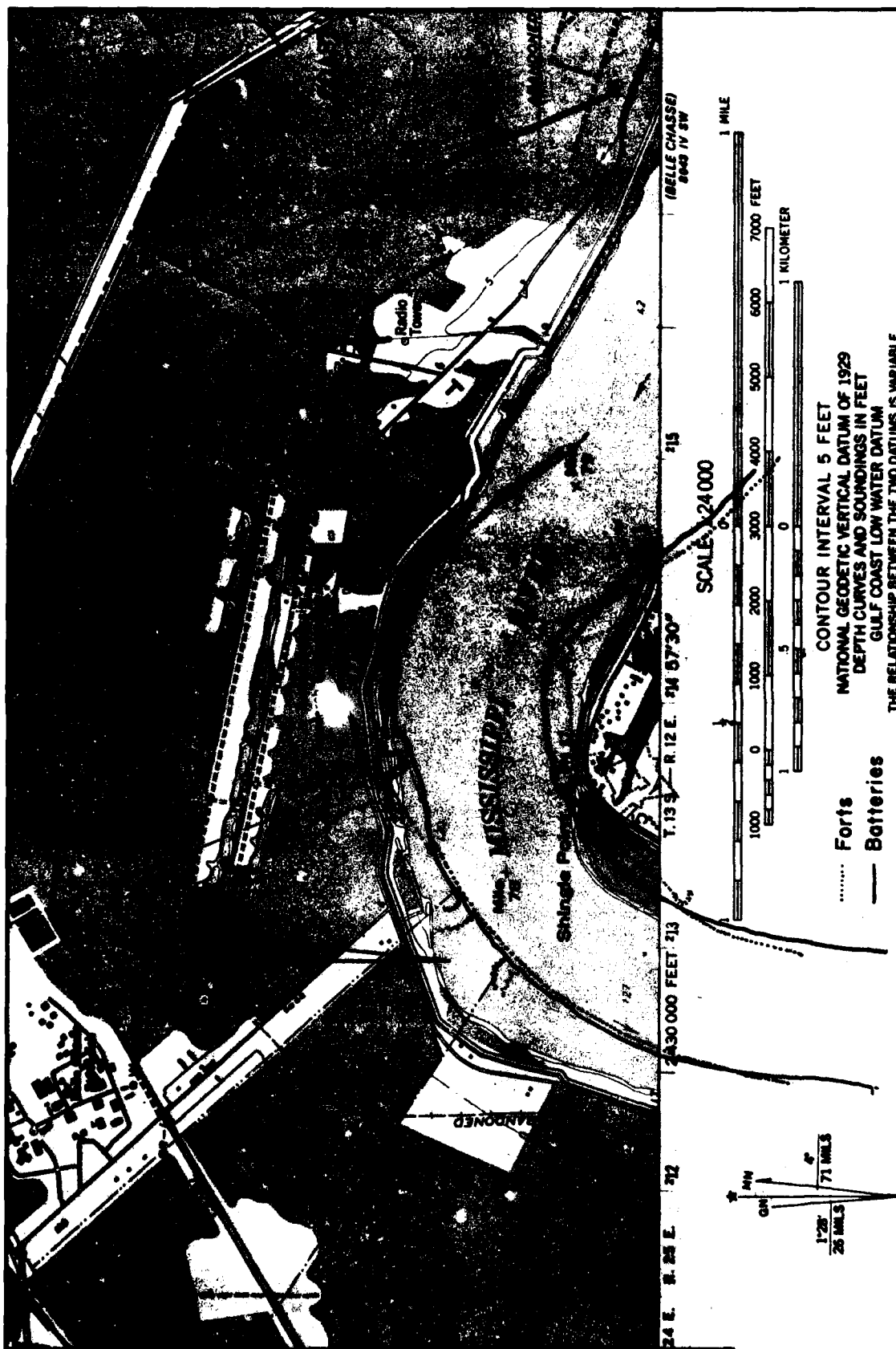


Figure 18. Overlay I, Figs. 1 and 2 (1747) on 1972 Chalmette Quadrangle.

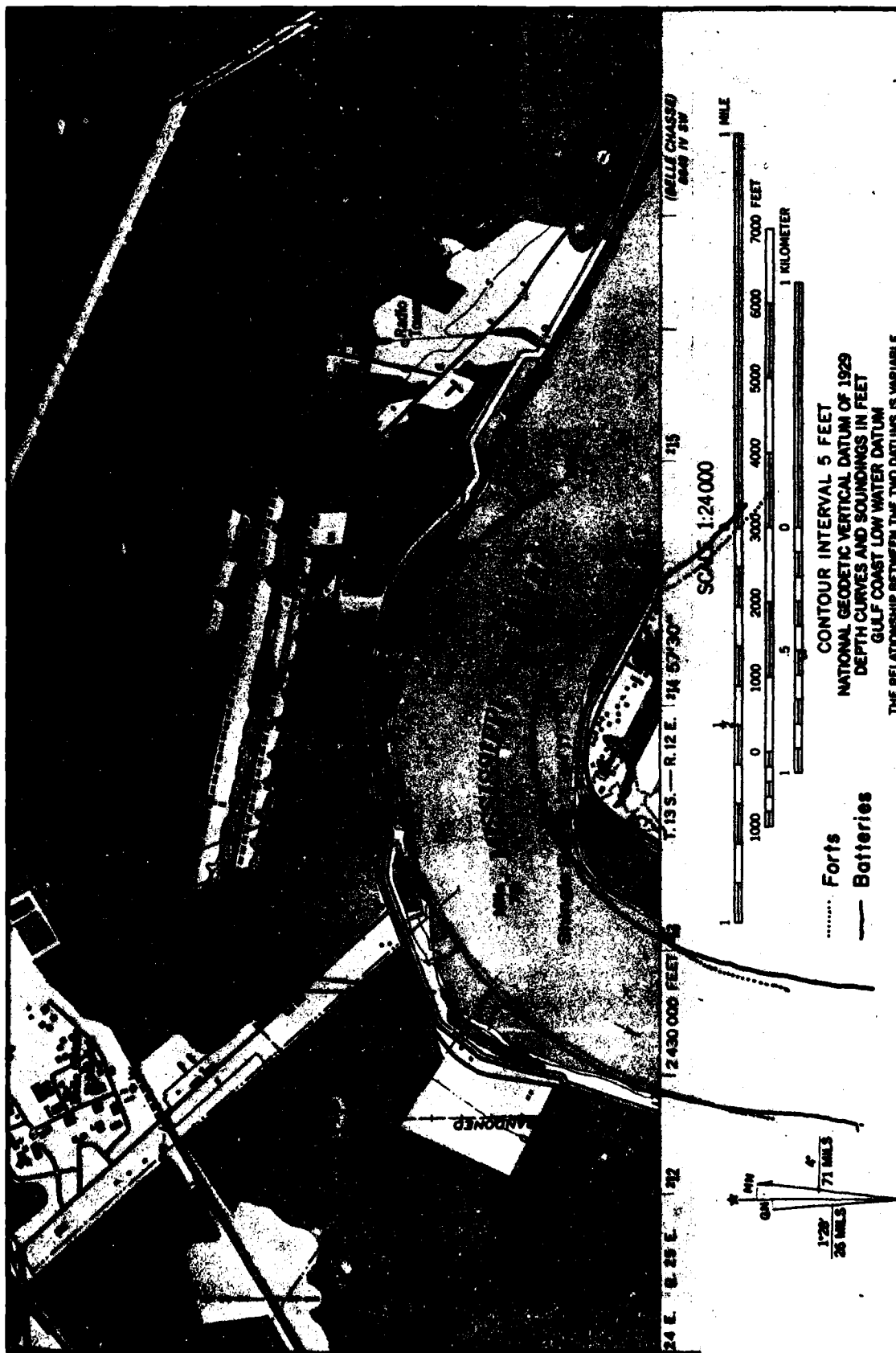


Figure 19. Overlay II, Figs. 1 and 2 (1747) on 1972 Chalmette Quadrangle.

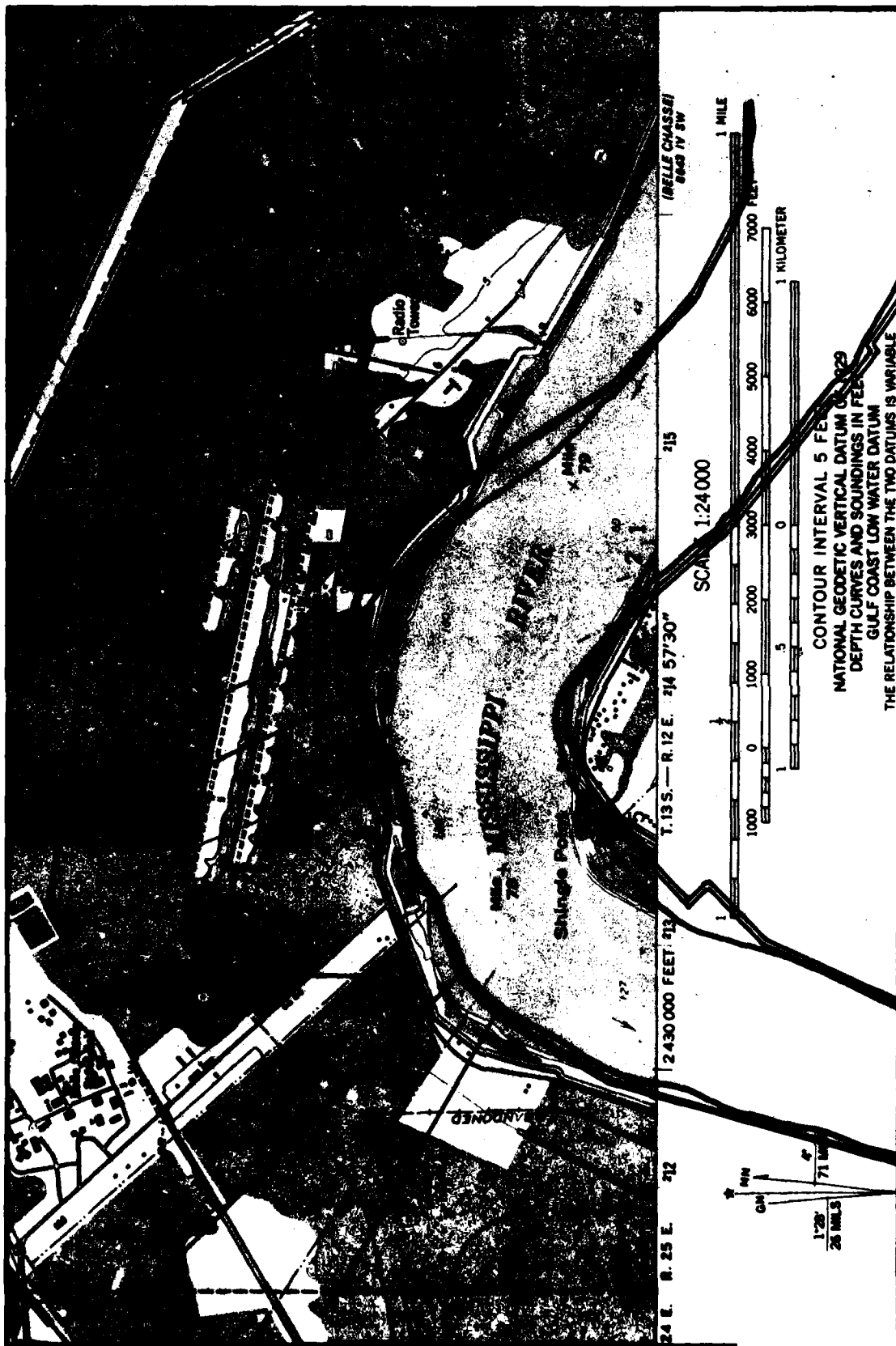


Figure 20. Overlay, LaFon map of English Turn on 1972 Chalmette Quadrangle.

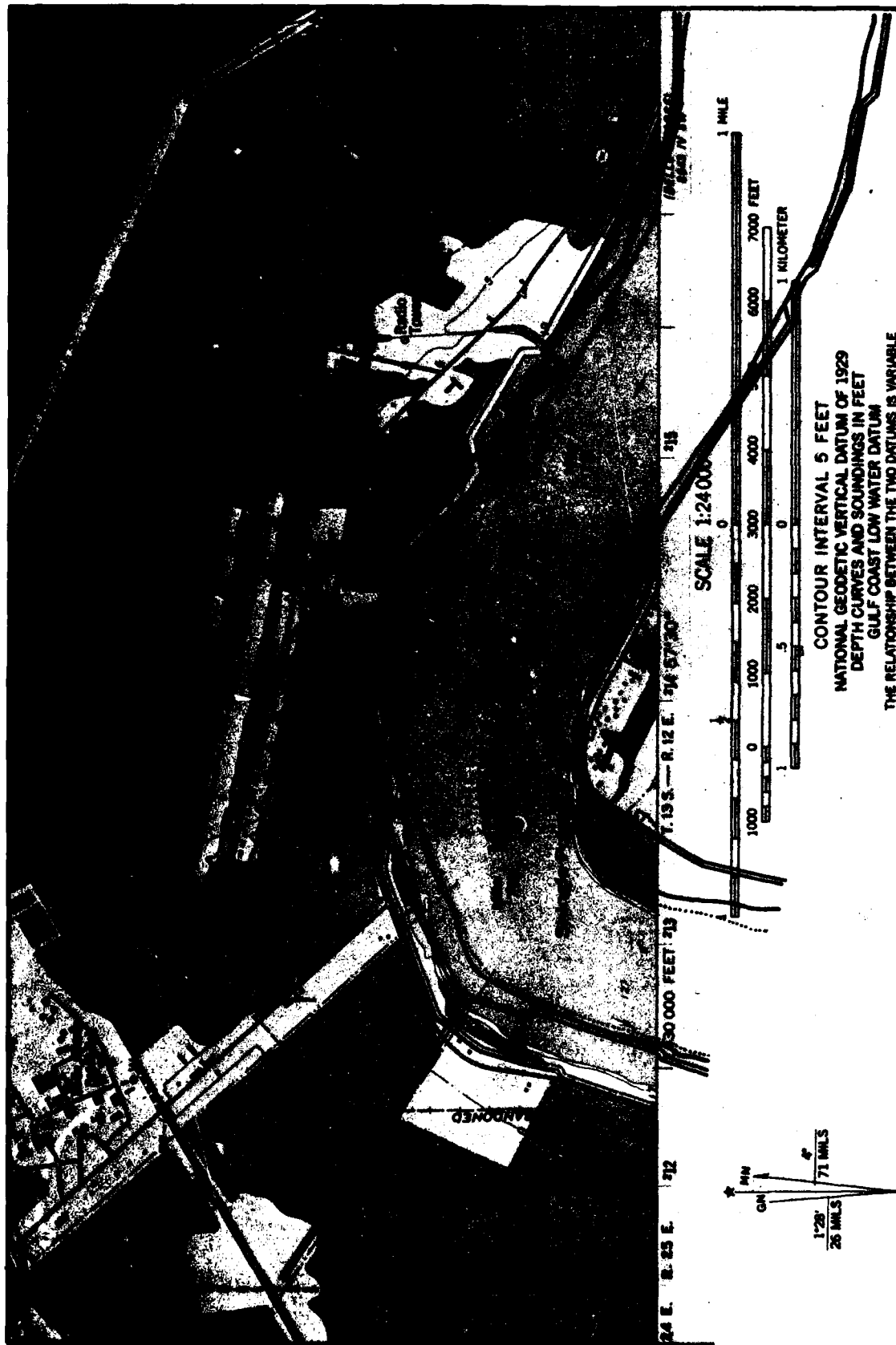


Figure 21. Overlay Mississippi River 1878 on 1972 Chalmette Quadrangle.

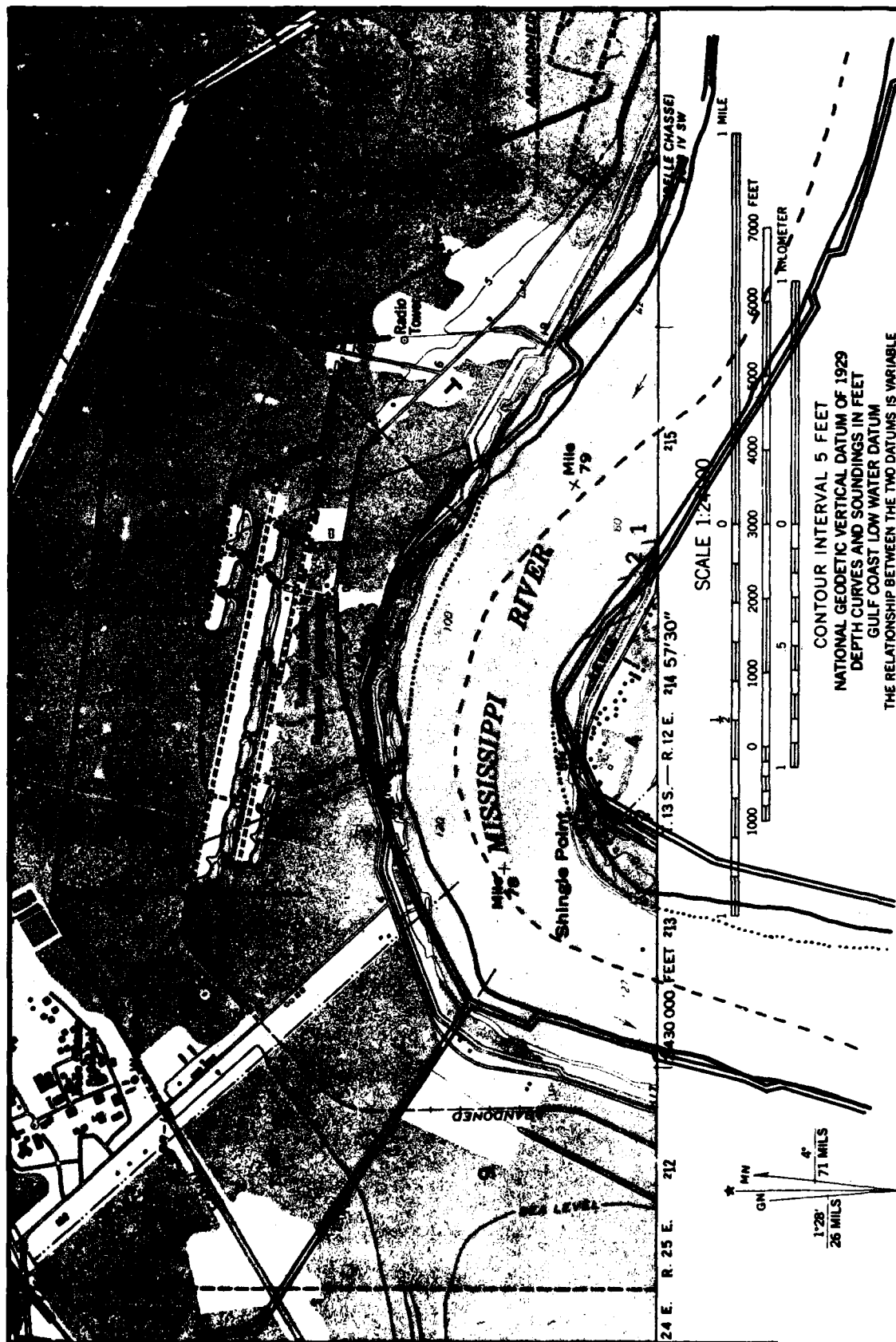


Figure 22. Overlay Mississippi River 1884 on 1972 Chalmette Quadrangle.

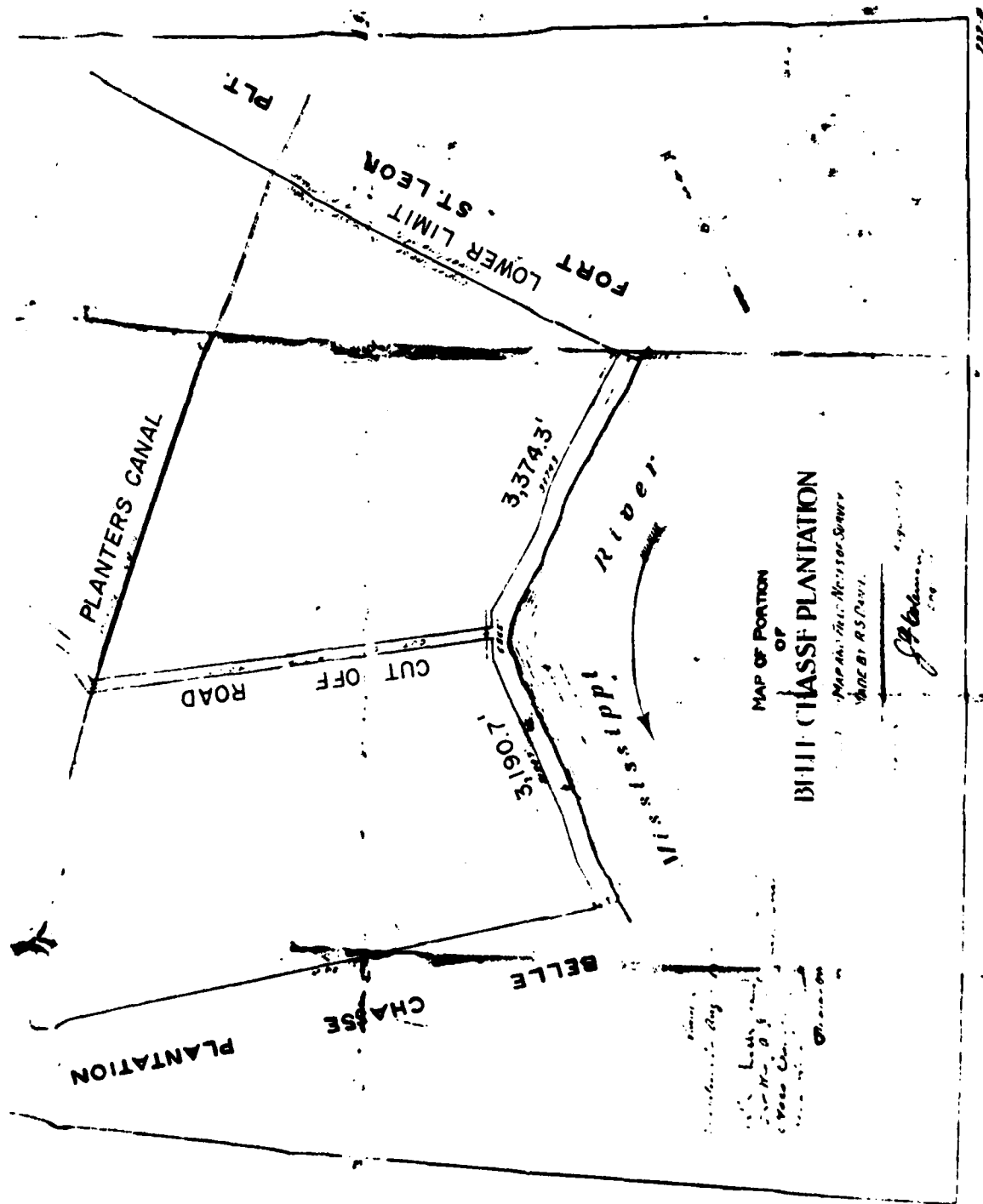


Figure 23. Map of Portion of Belle Chasse Plantation, August, 1912.

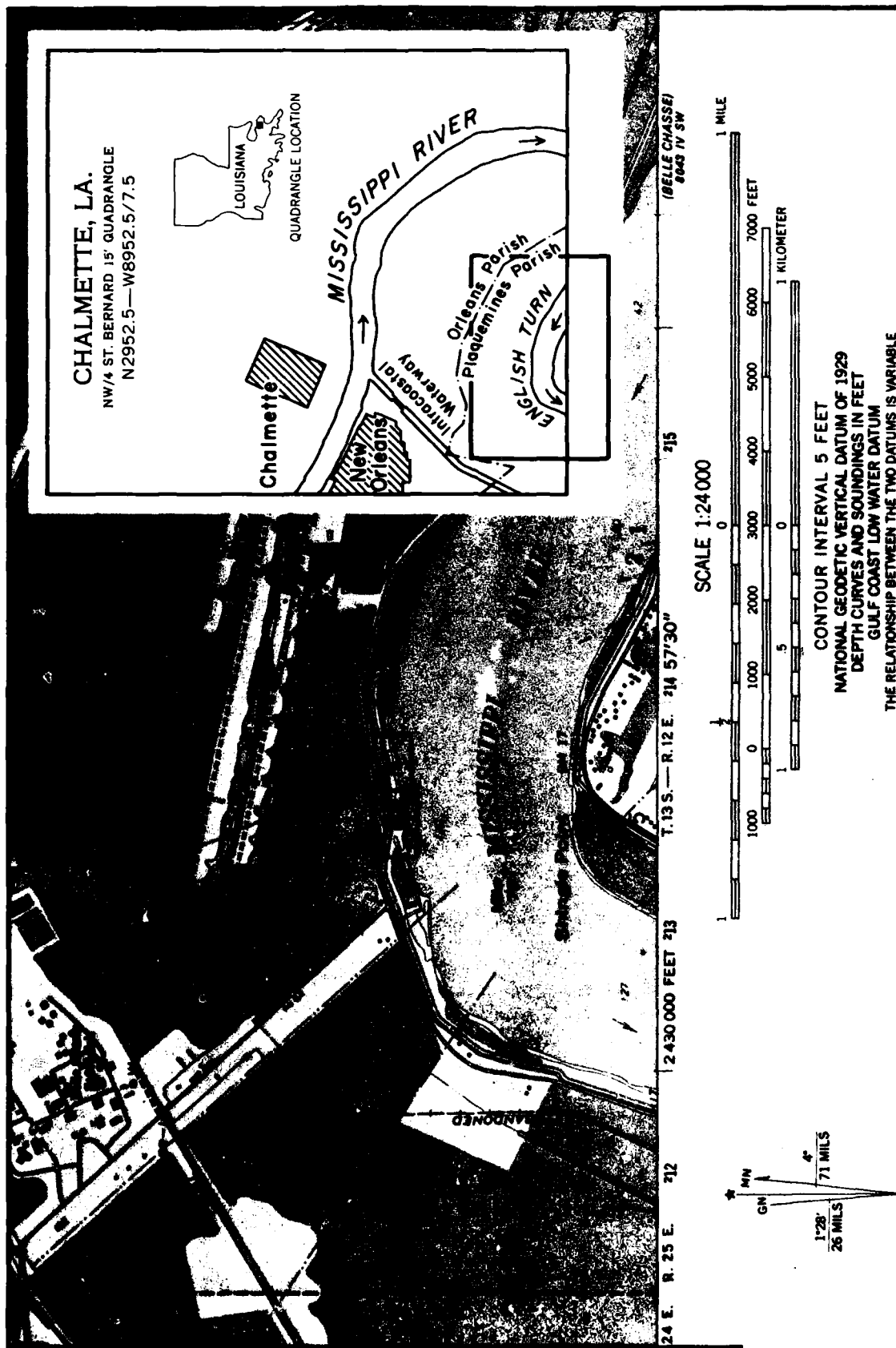


Figure 24. Project Location Map Showing areas A and B.

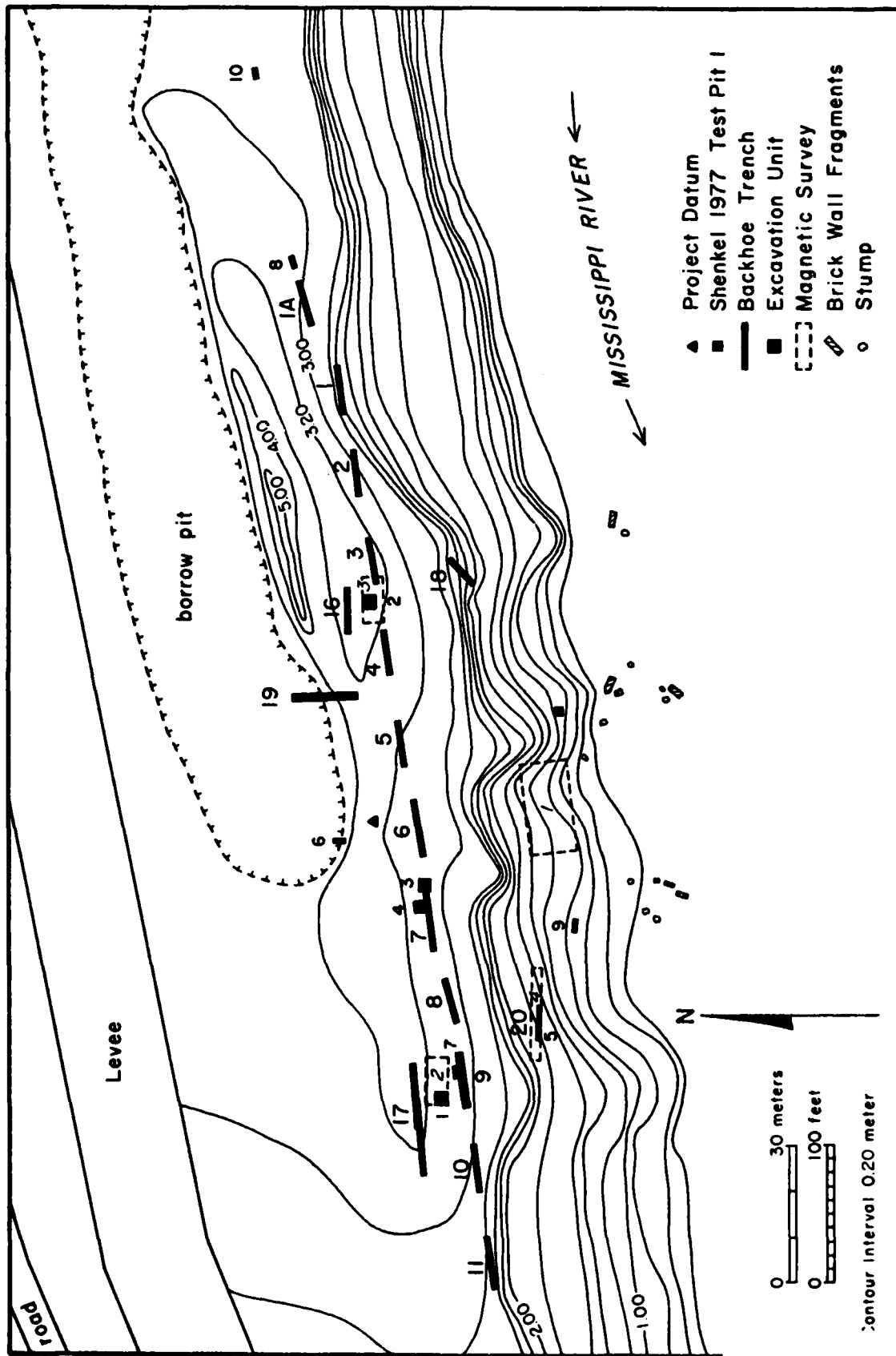


Figure 24a. Project map showing Area A.

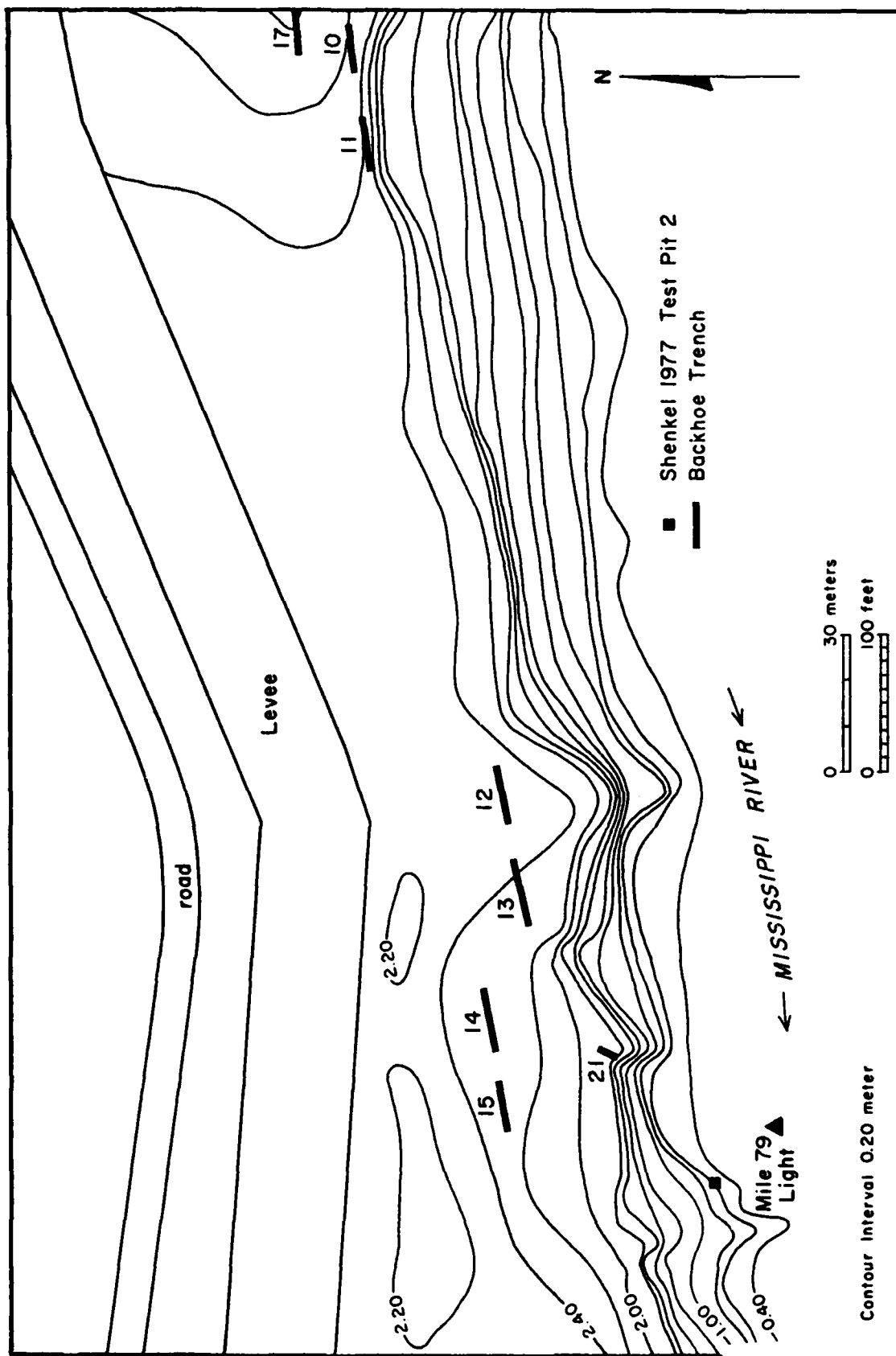


Figure 24b. Project map showing Area B.

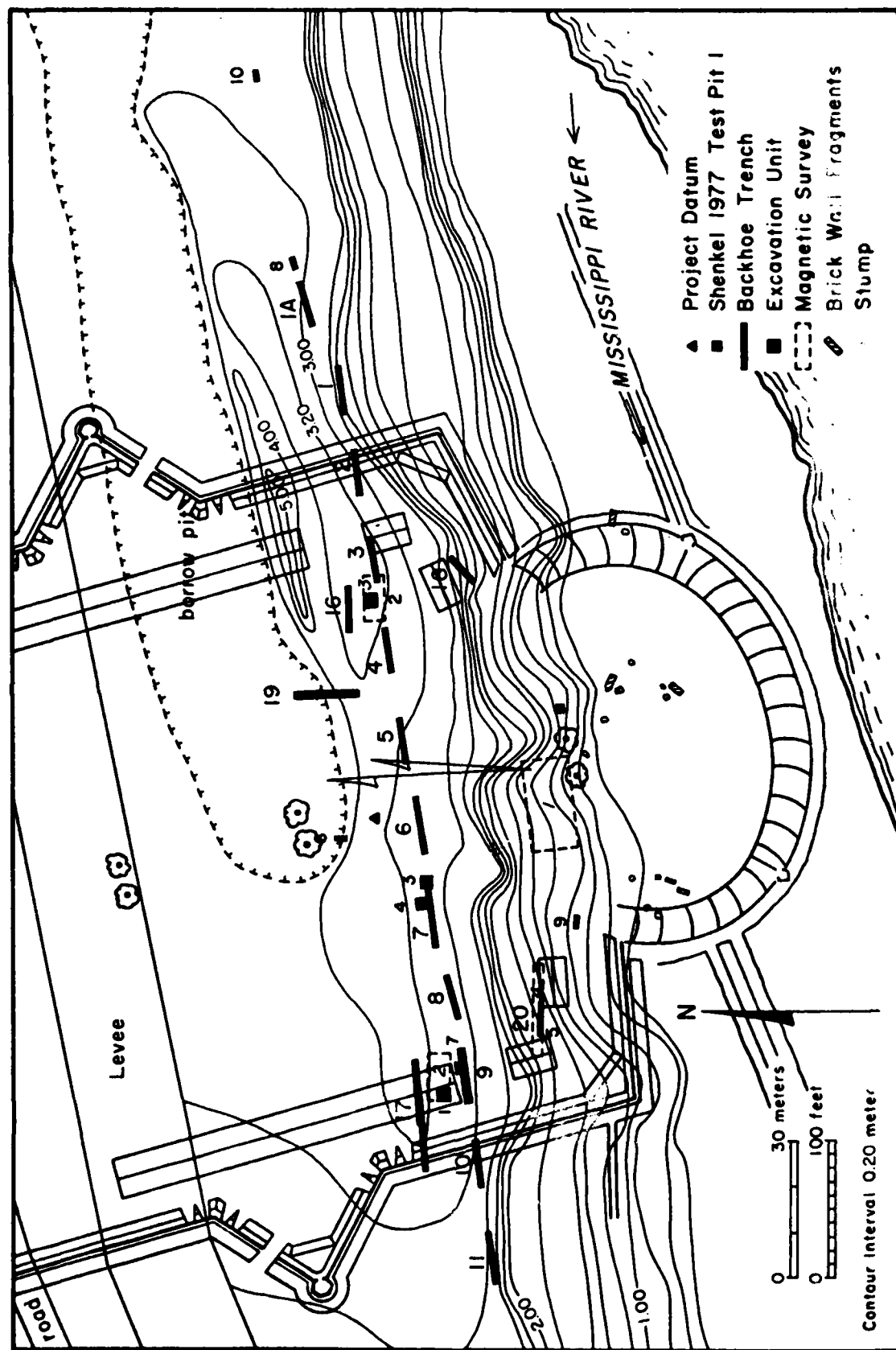


Figure 25. Overlay of French fort on Project Map, Position i.

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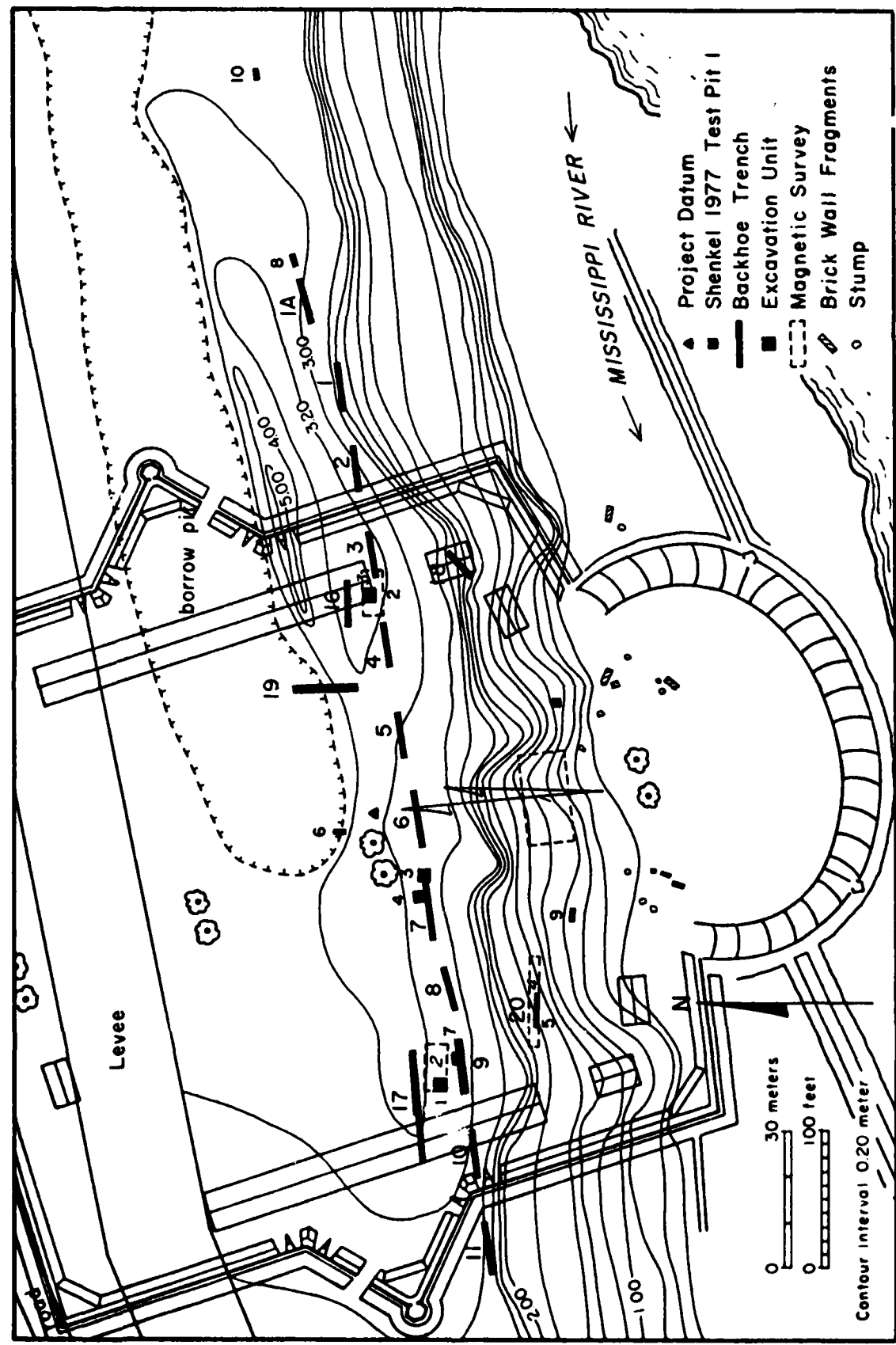


Figure 26. Overlay of French fort on Project Map, Position 2.

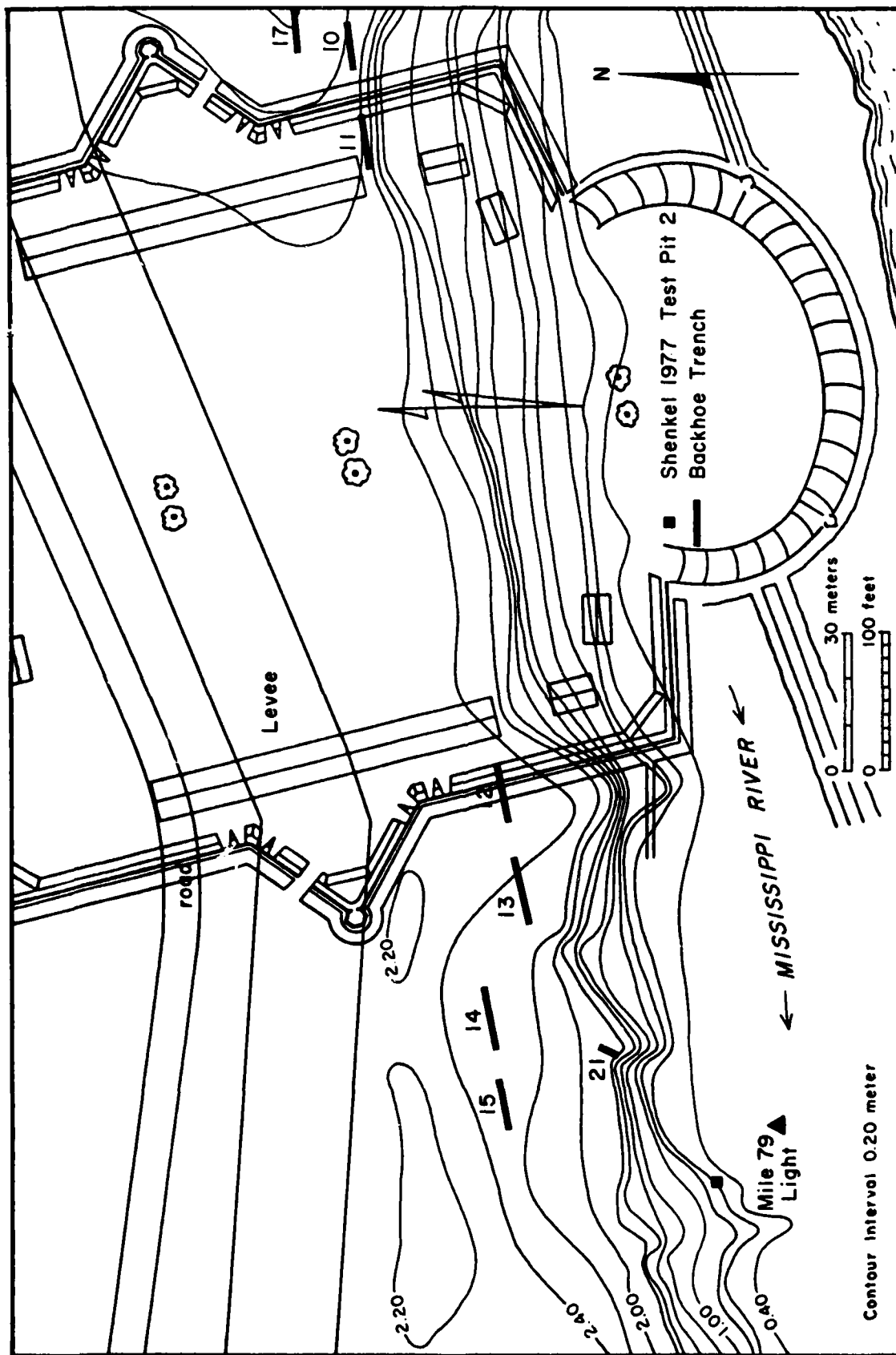
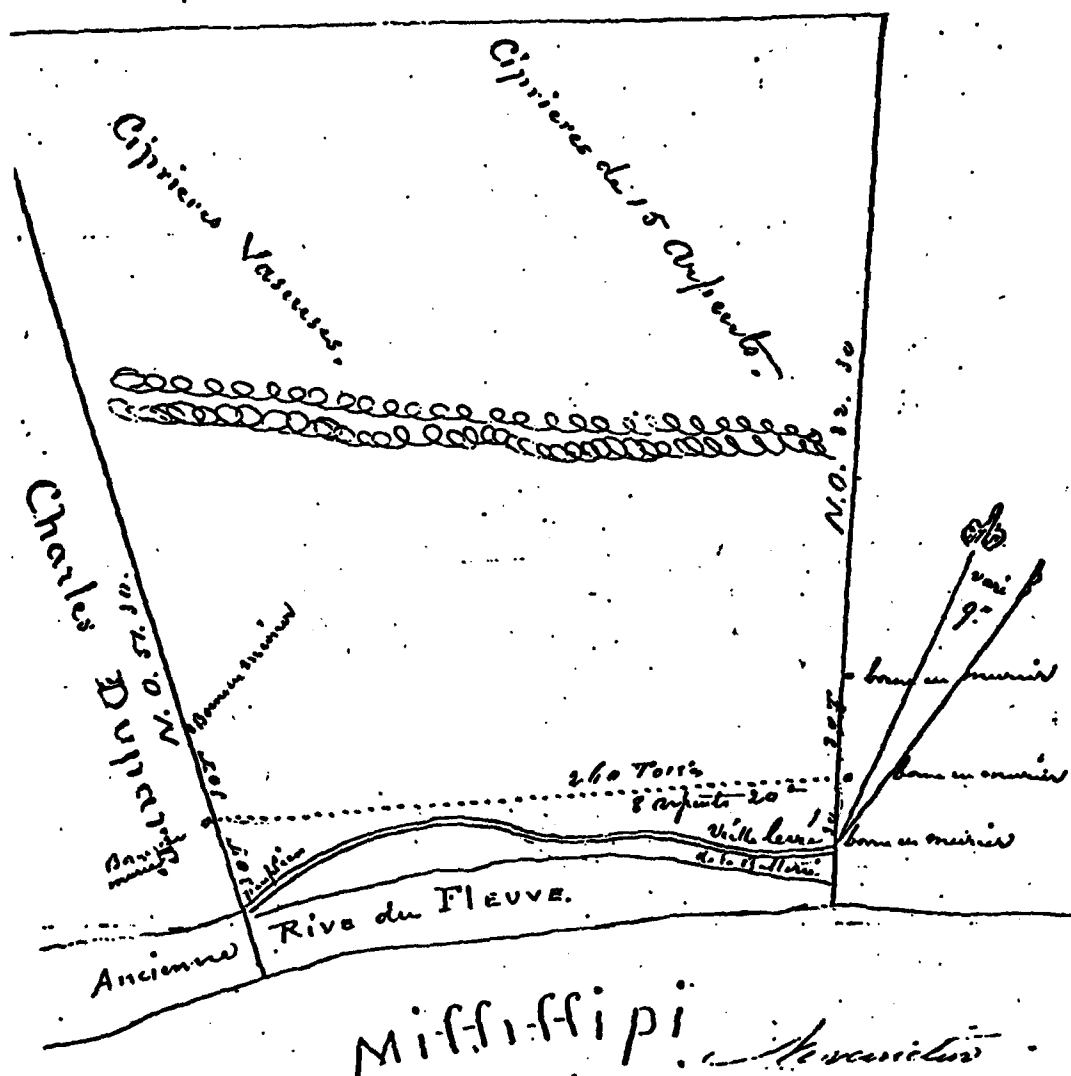


Figure 27. Overlay of French fort on Project Map, Position 3.



Mississippi
Sketch taken from the one made by Lafon, 1805.

Figure 29. The Larche tract, "Sketch taken from the one made by Lafon, 1805."

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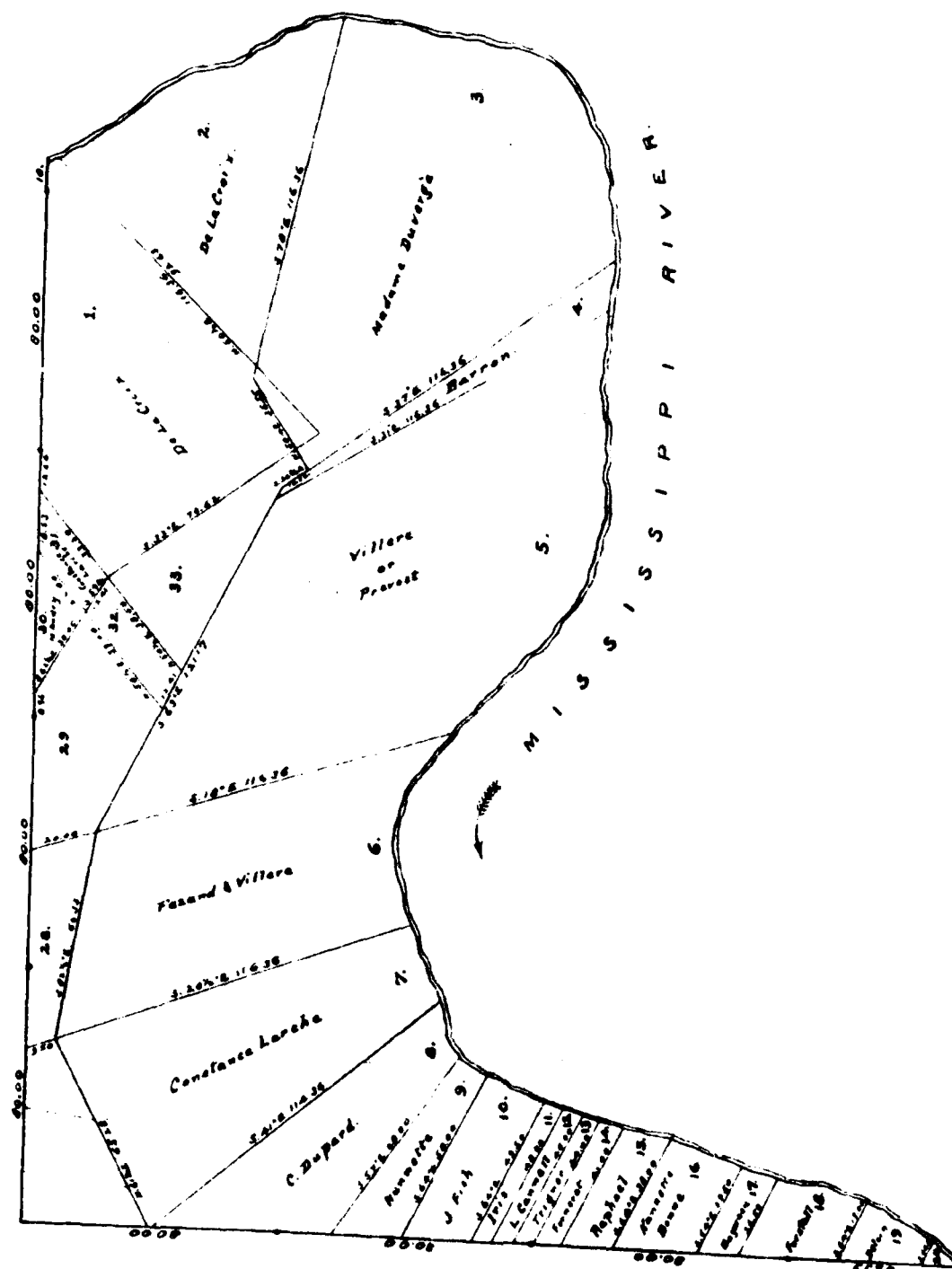


Figure 30. Detail of township and range map, 1830, "T. 14S R. 25E South Eastern District, Louisiana."

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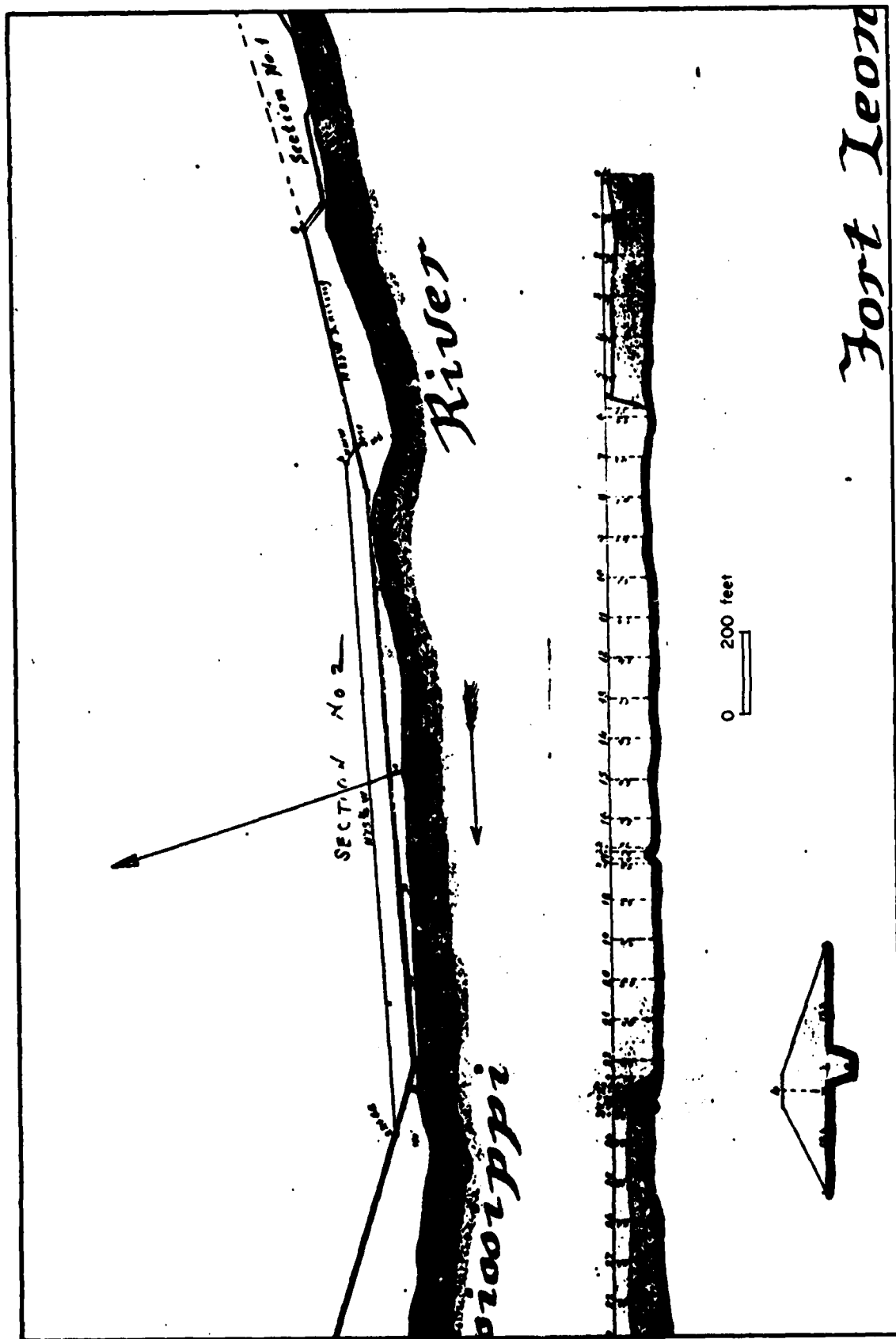


Figure 31. Fort Leon levee, 1889, showing pre-1889 levee and probable proposed setback.

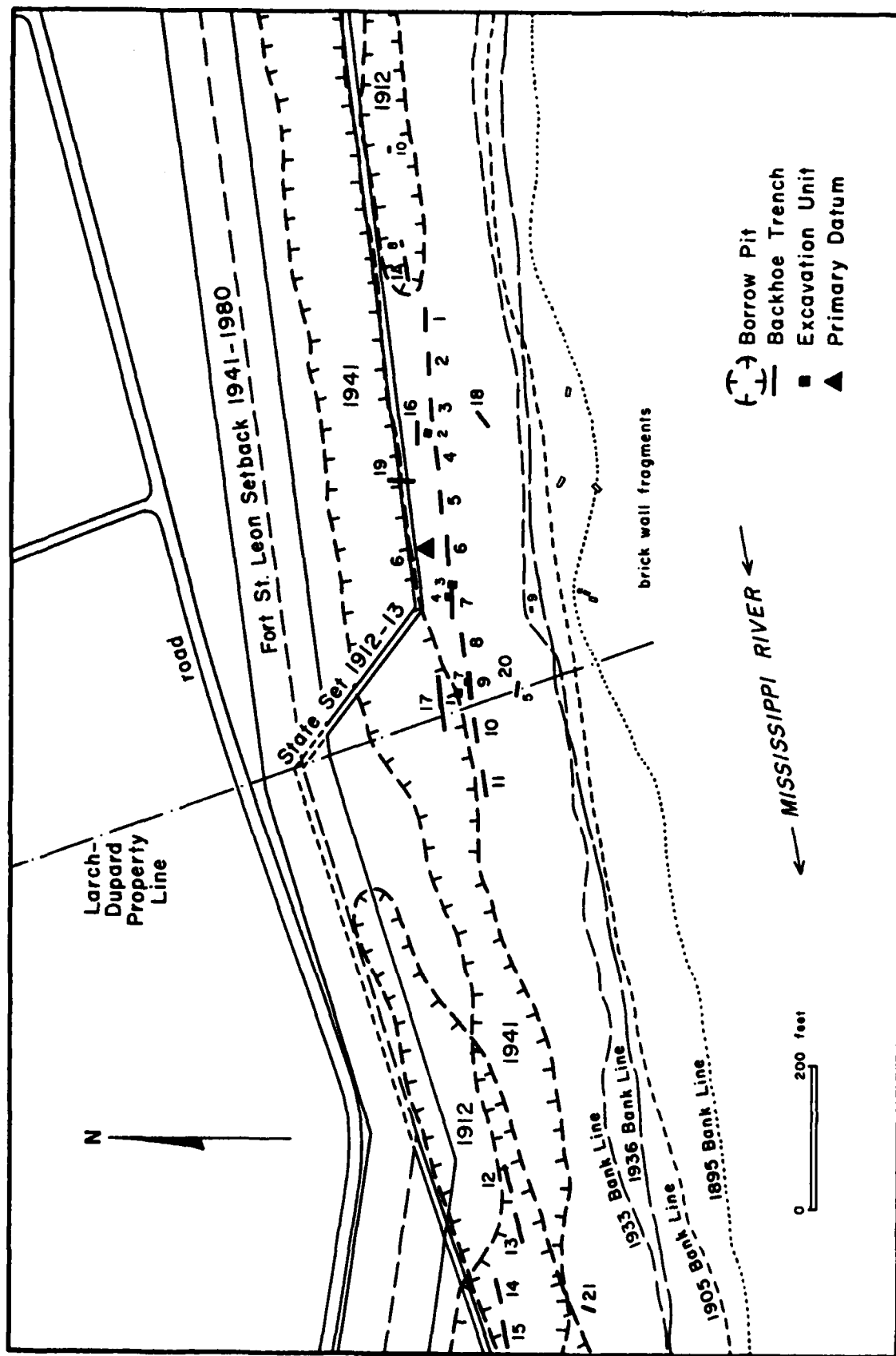
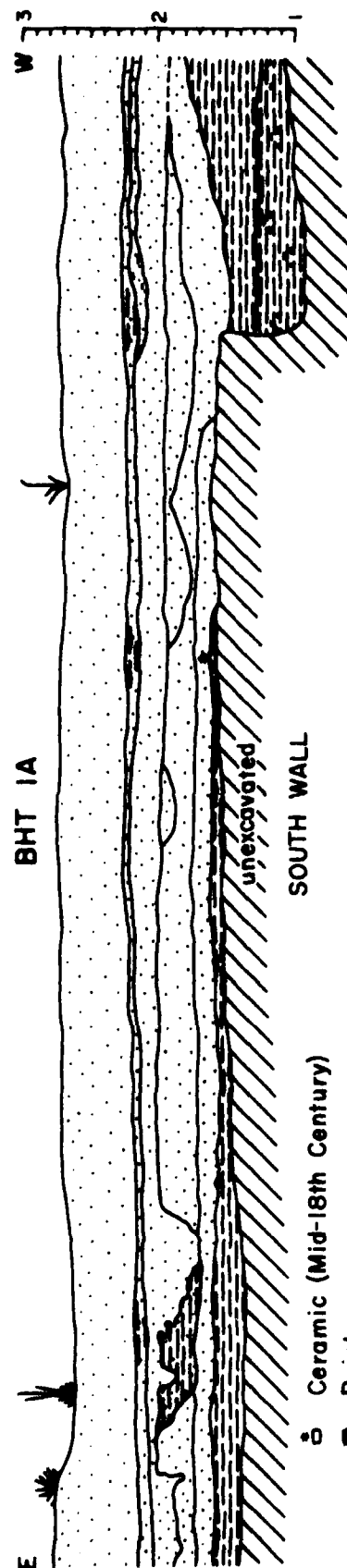


Figure 32. Project area, showing banklines, borrow pits, and levees.



○ Ceramic (Mid-18th Century)

■ Brick

Sand

Silty Sand

Sand with Clay

Silty Sand with Clay

Silty Sandy Loam

Silty Clayey Loam

Clayey Loam

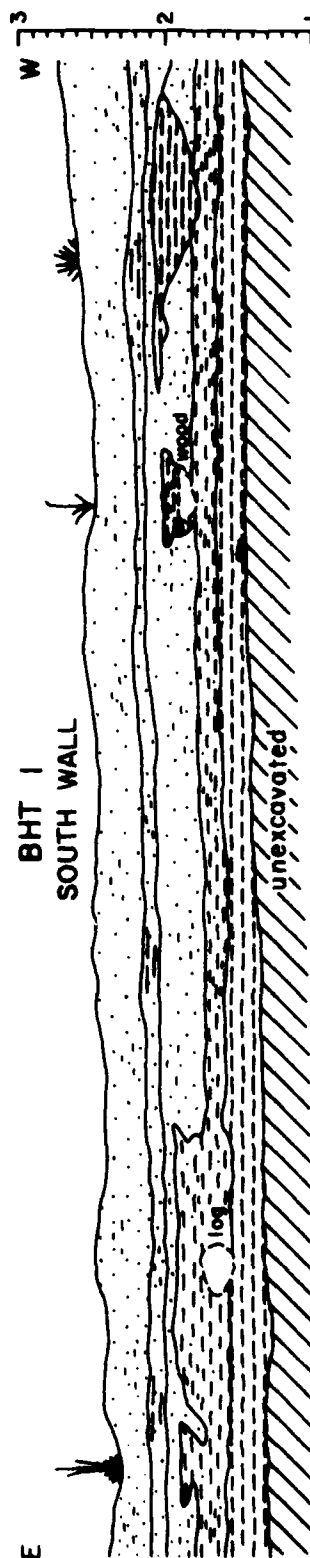
Sandy Clay

Silty Clay

Clay

0 1 meter

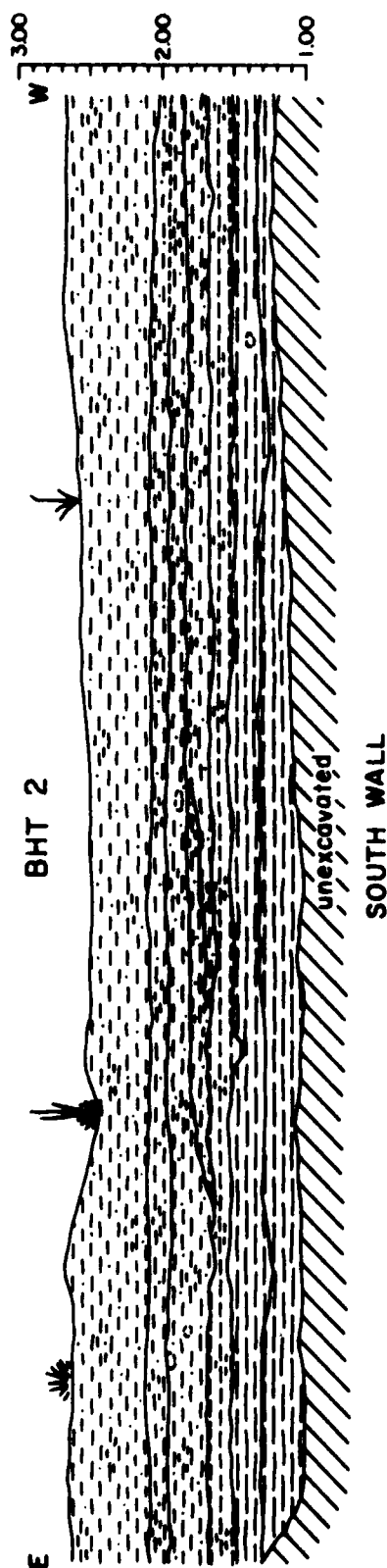
Vertical Scales are Meters Above MGL



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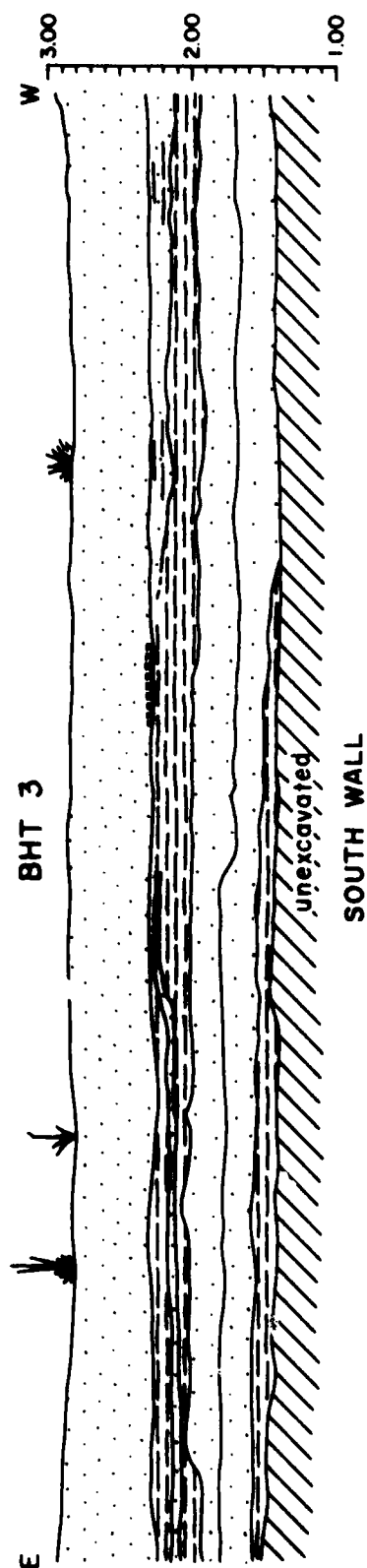
Figure 33. Backhoe Trench 1A, Backhoe Trench 1.



- ===== Plywood (20th Century)
- Wood
- Sand
- Sand with Clay
- ~ Sandy Silty Loam
- Silty Clayey Loam
- Clay

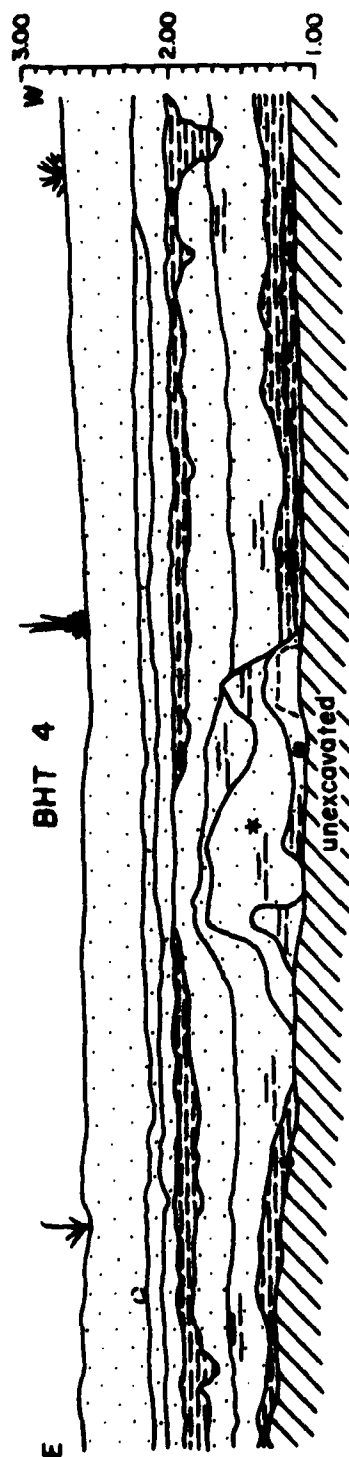
279

0 1 meter
Vertical Scales are Meters Above MGL



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Figure 34. Backhoe Trench 2, Backhoe Trench 3.



- Brick
- Wood
- * Ceramic (after 1780)
- Coal
- Slag
- Ash
- Sand
- Mixed Sands
- Sand with Clay
- Clay with Sand
- Sandy Clay
- Clay

0 1 meter
Vertical Scales are Meters Above MGL

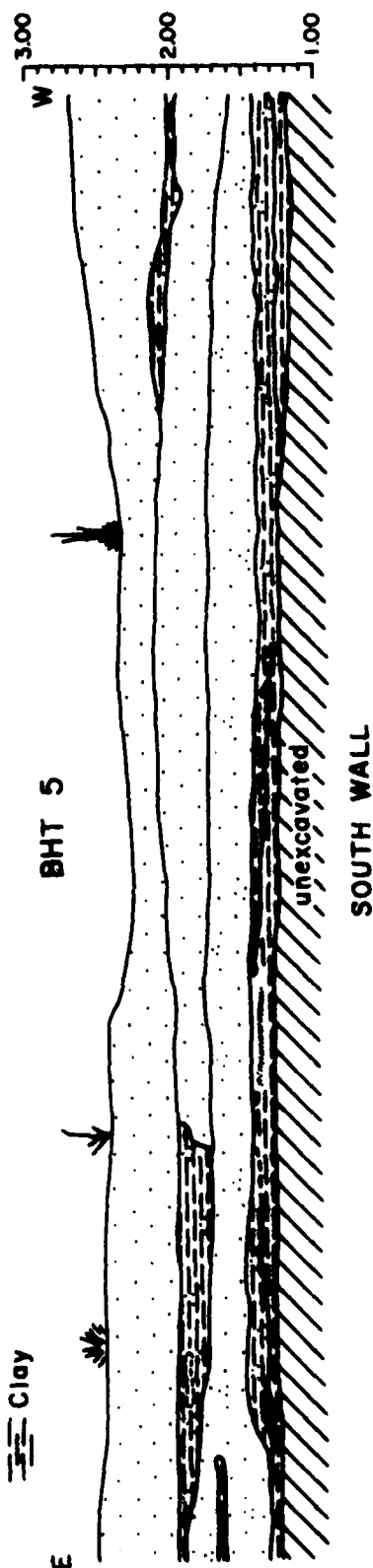
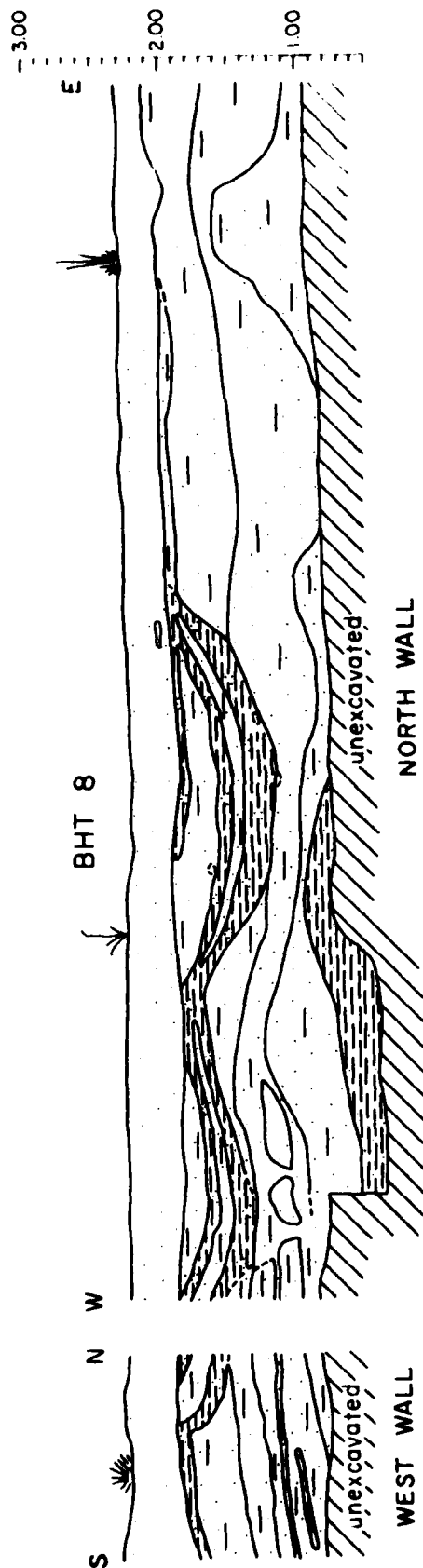


Figure 35. Backhoe Trench 4, Backhoe Trench 5.



Linoleum (20th Century)

Wood

Sand

Clayey Sand

Sandy Silty Loam

Silty Loam

Sandy Clayey Loam

Silty Clayey Loam

Clayey Loam

Sandy Clay

Clay

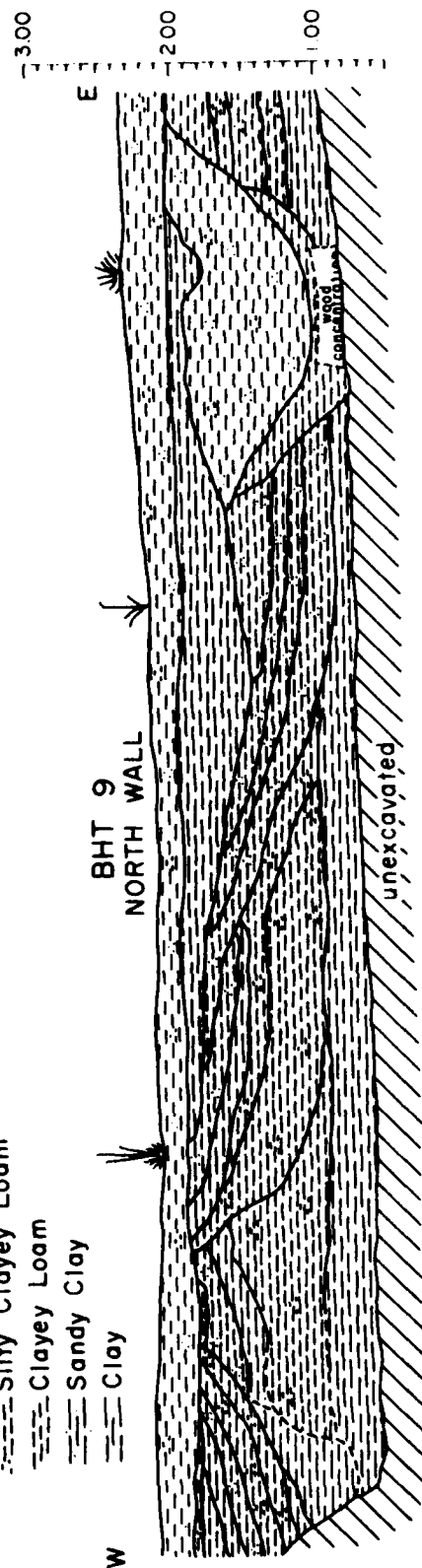
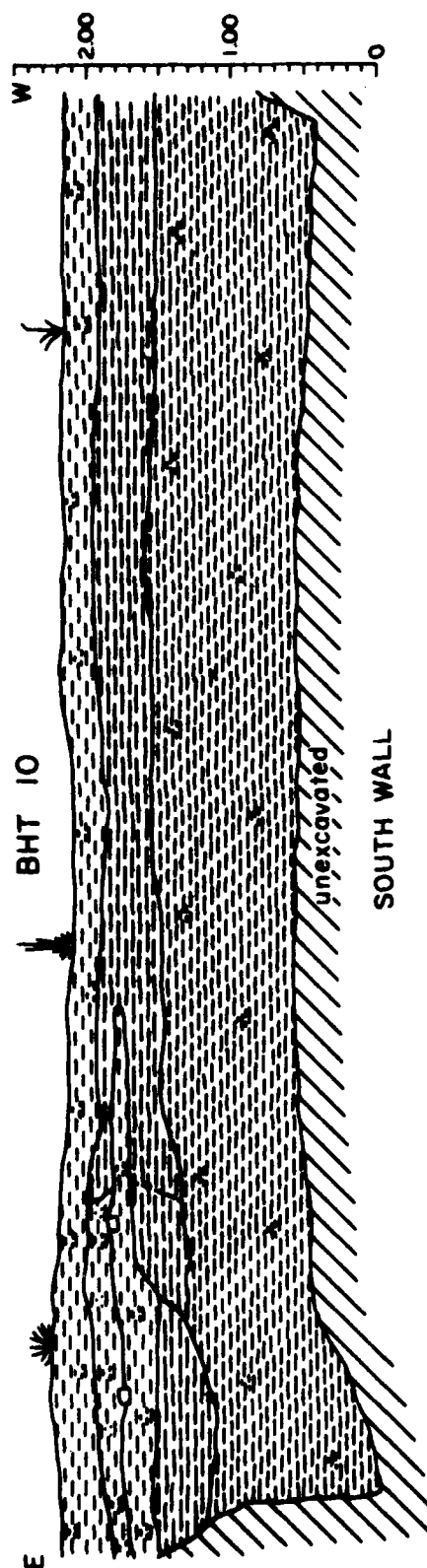


Figure 37. Backhoe Trench 8, Backhoe Trench 9.



□ Glass (20th Century)

--- Sandy Silty Loam

--- Silty Loam

--- Silty Clayey Loam

--- Clayey Loam

--- Clay

Vertical Scales are Meters Above MGL

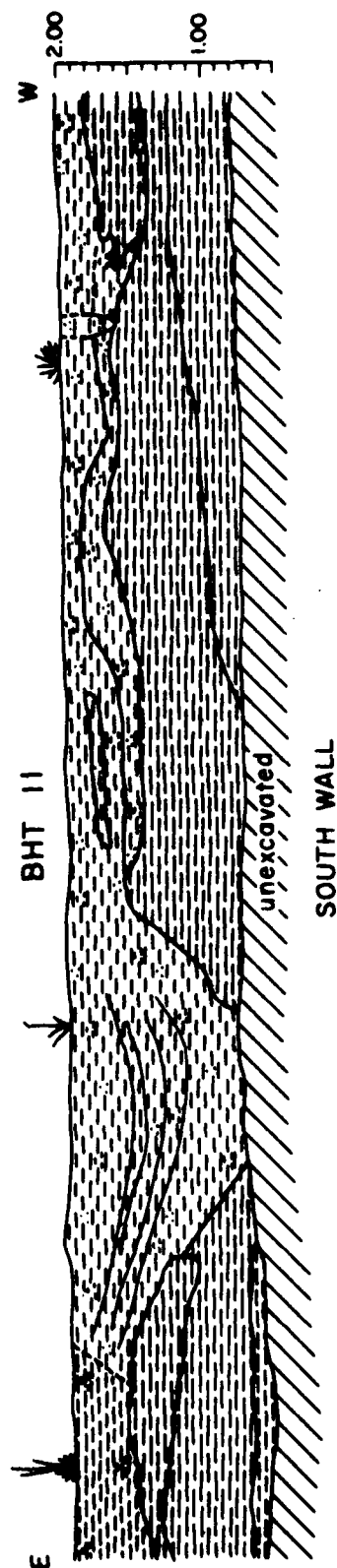
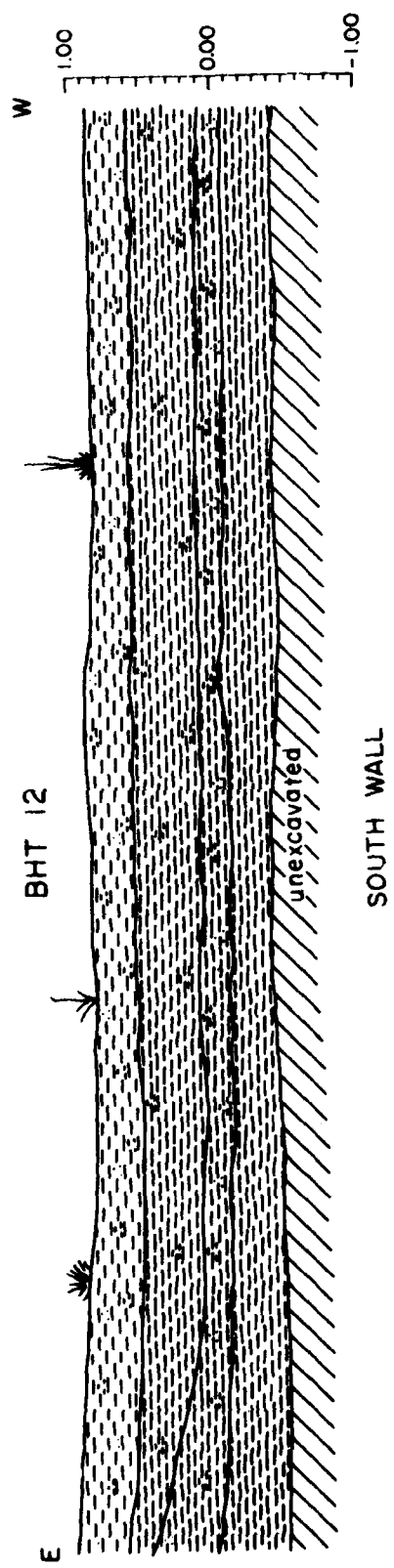
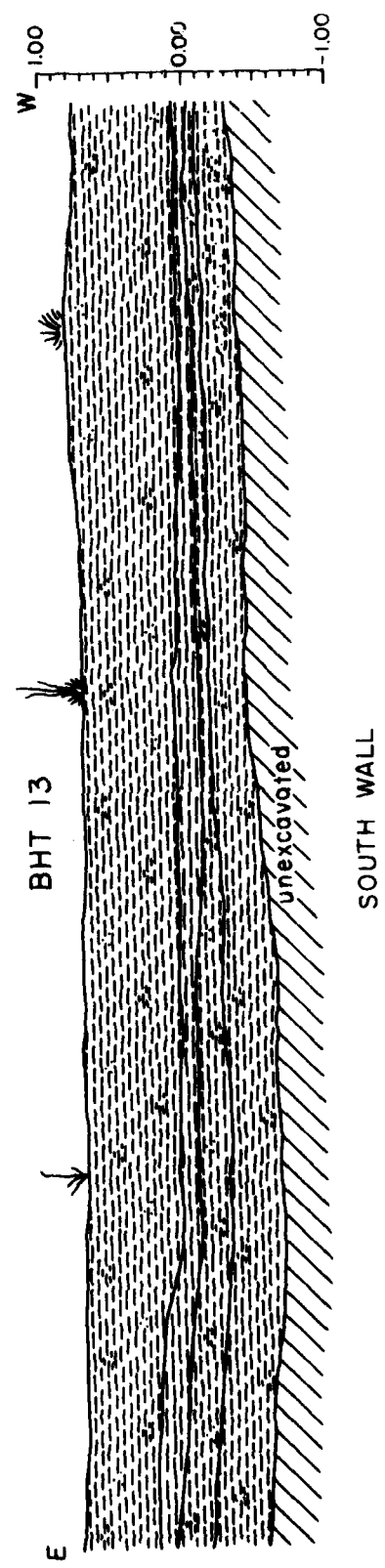


Figure 38. Backhoe Trench 10, Backhoe Trench 11.



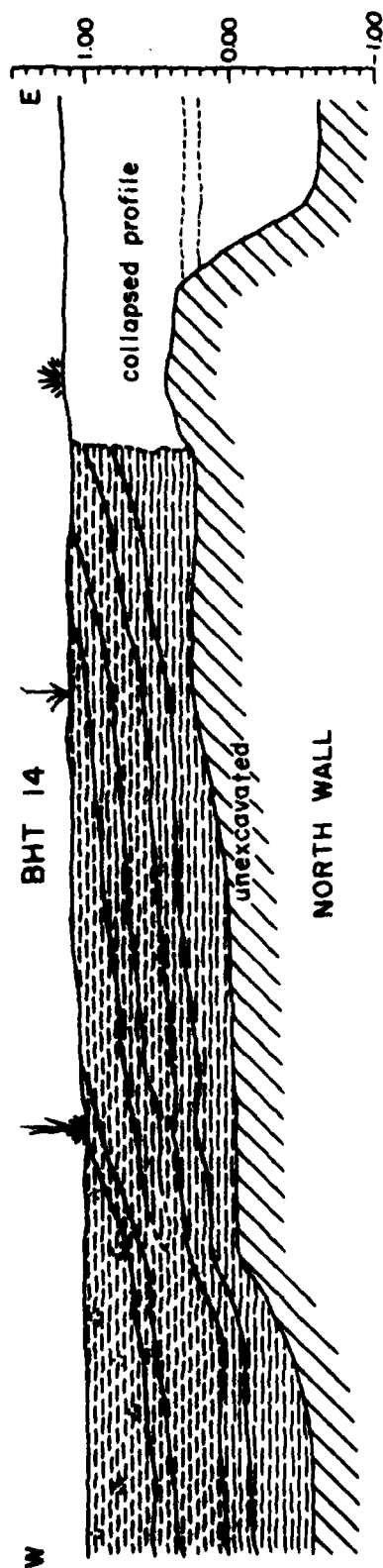
- Silty Sand
- Sandy Silty Loam
- Sand, Silty Clayey Loam
- Silty Clayey Loam
- Clayey Loam
- ===== Clay

0 1 meter
Vertical Scales are Meters Above MGL



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Figure 39. Backhoe Trench 12, Backhoe Trench 13.



--- Wood

\\ Sandy Silty Loam

/// Sandy Silty Clayey Loam

— Clayey Loam

— Clay

0 1 meter
Vertical Scales are Meters Above MGL

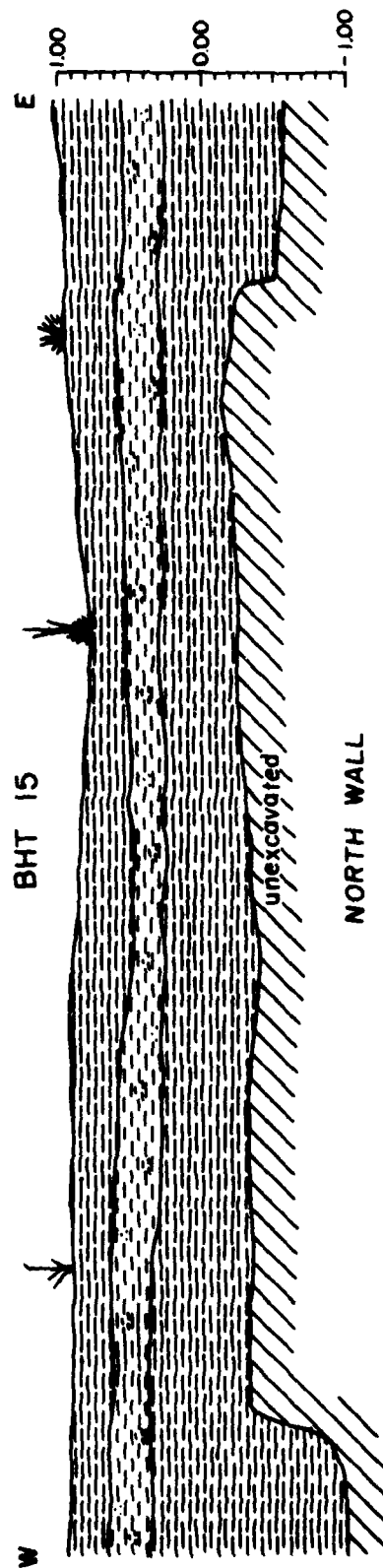
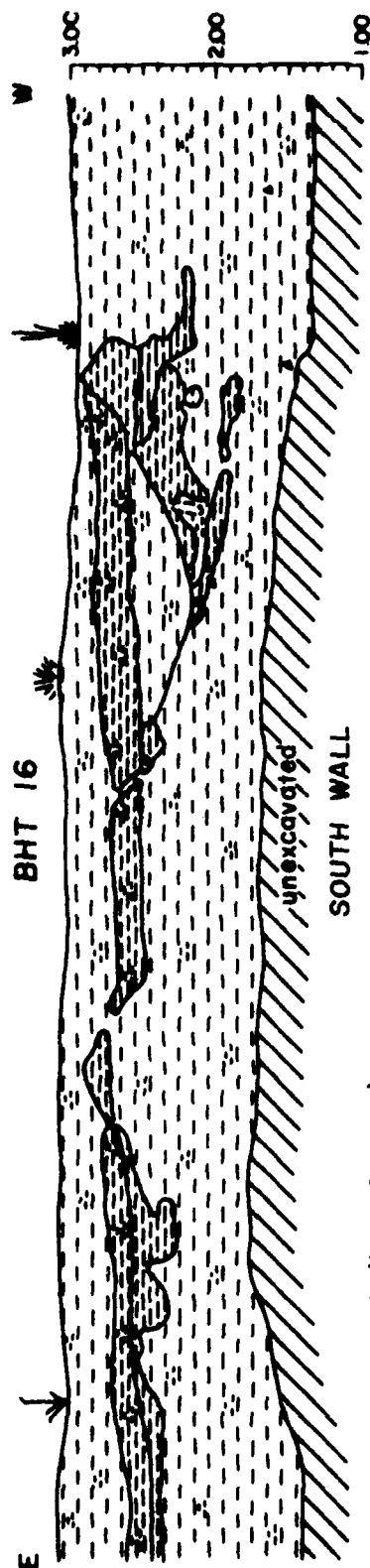


Figure 40. Backhoe Trench 14, Backhoe Trench 15.



▲ Nail (20th Century)

● Brick

▲ Brick Fragment

○ Root Cast

Sand

Sand with Clay

Clayey Sand

Silty Loam

Silty Clayey Loam

Clayey Loam

Sandy Clay

Clay

0 1 meter

Vertical Scales are Meters Above MGL

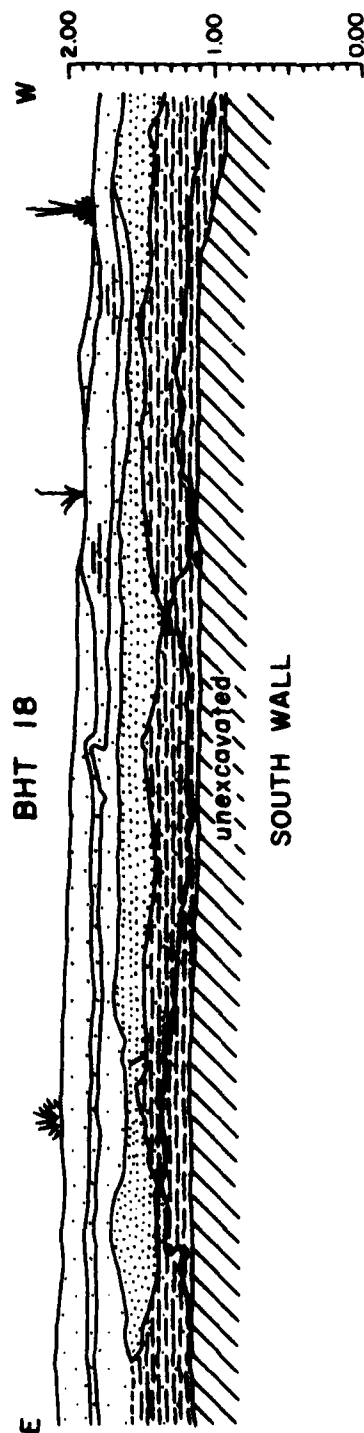
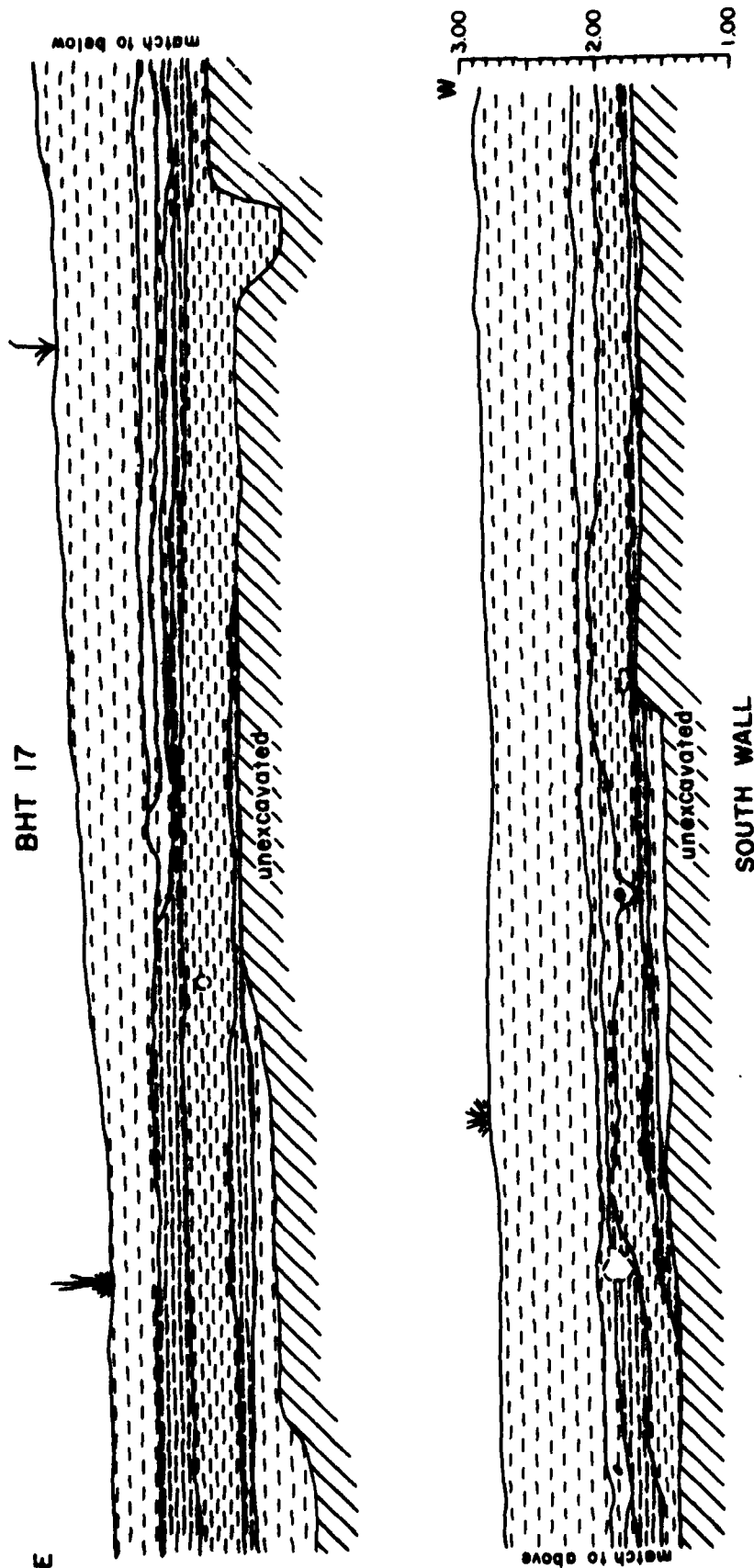


Figure 41. Backhoe Trench 16, Backhoe Trench 18.



- Leaf Mat
- Wood
- Bottle (1880-1913)
- Glass (20th Century)
- Sandy Silty Loam
- Silty Clayey Loam
- Clay

0 1 meter
Vertical Scales are Meters Above MGL

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Figure 42. Backhoe Trench 17.

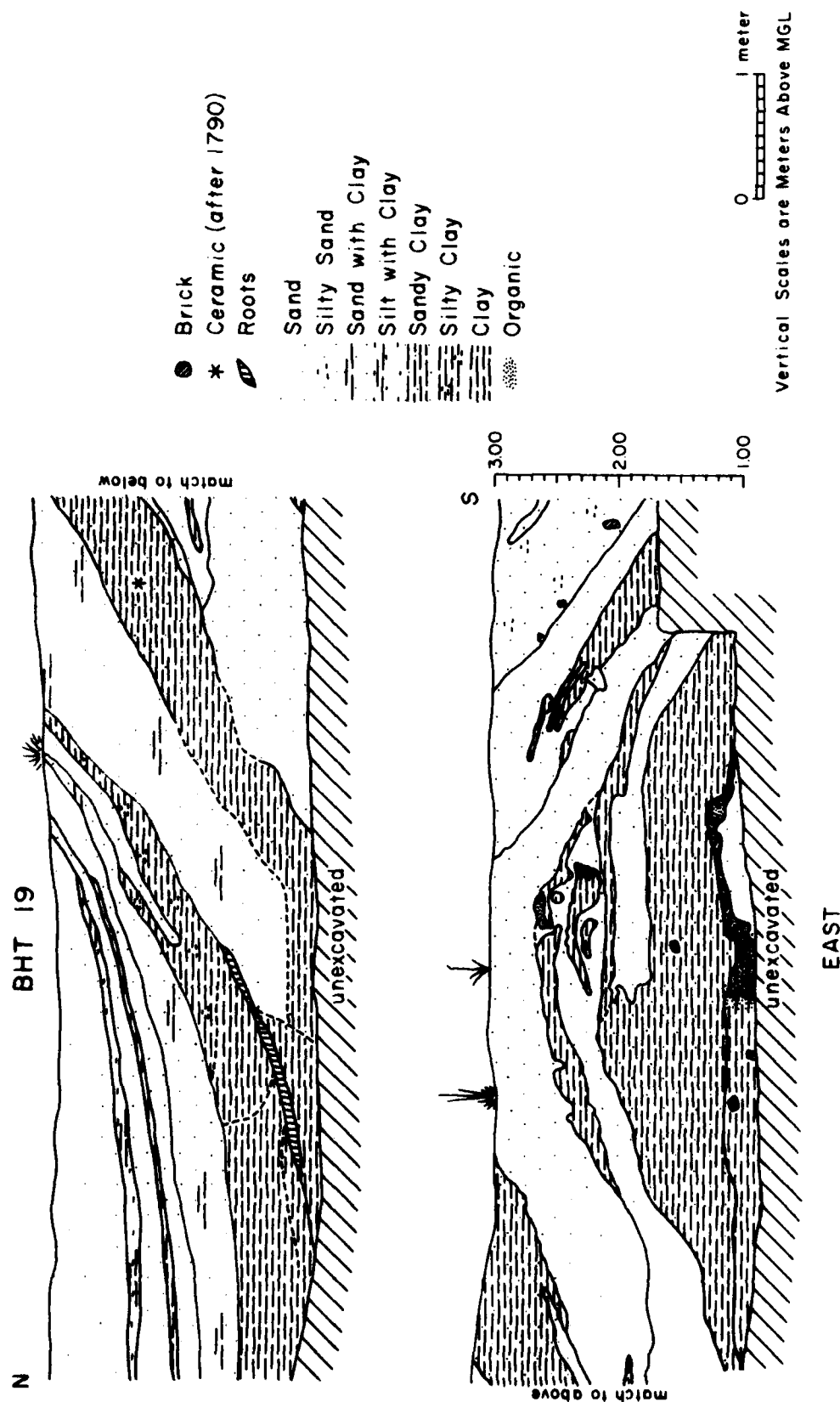


Figure 43. Backhoe Trench 19.

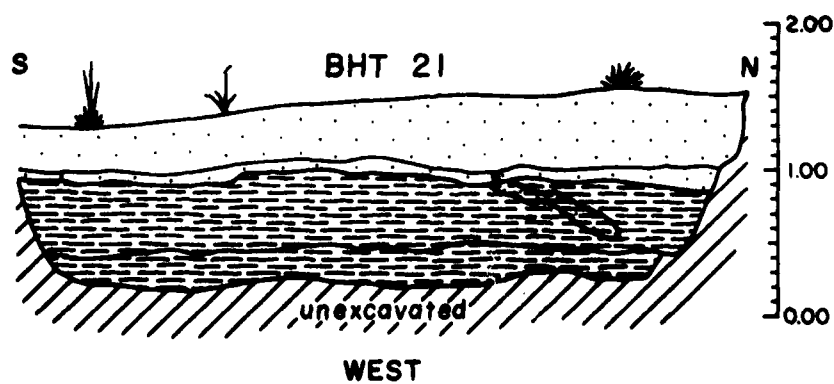
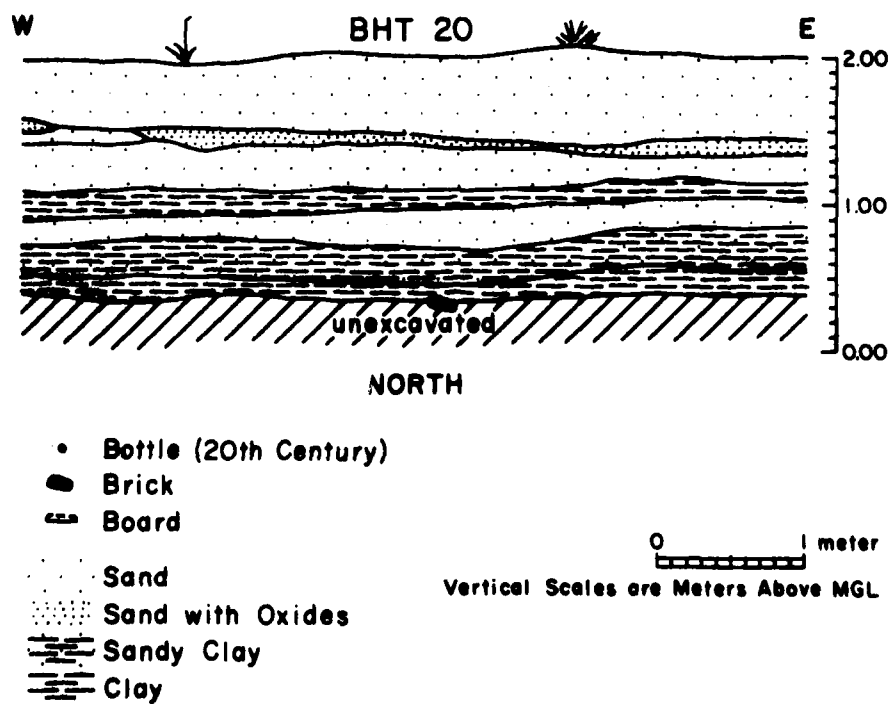


Figure 44. Backhoe Trench 20, Backhoe Trench 21.

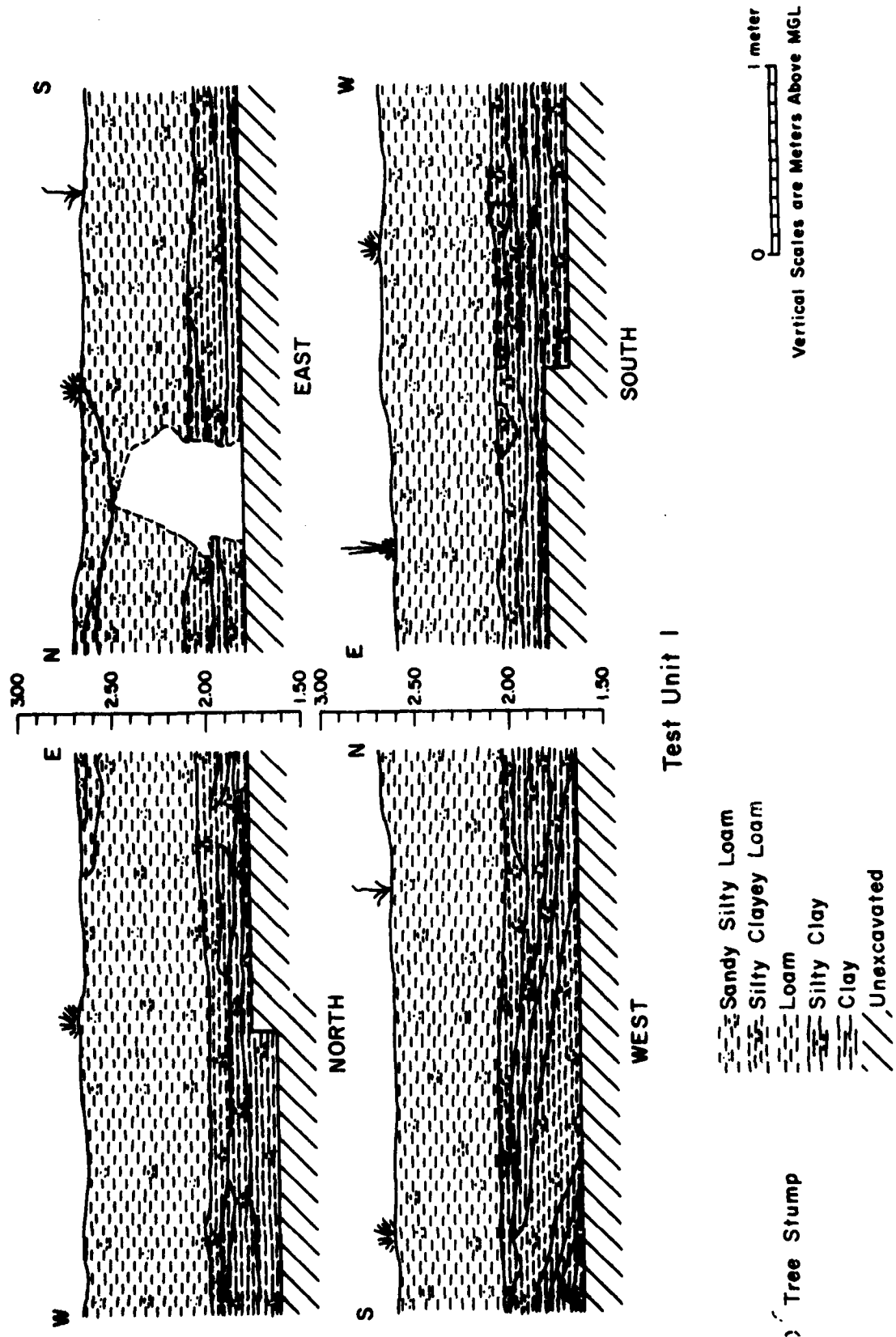


Figure 45. Test Unit 1.

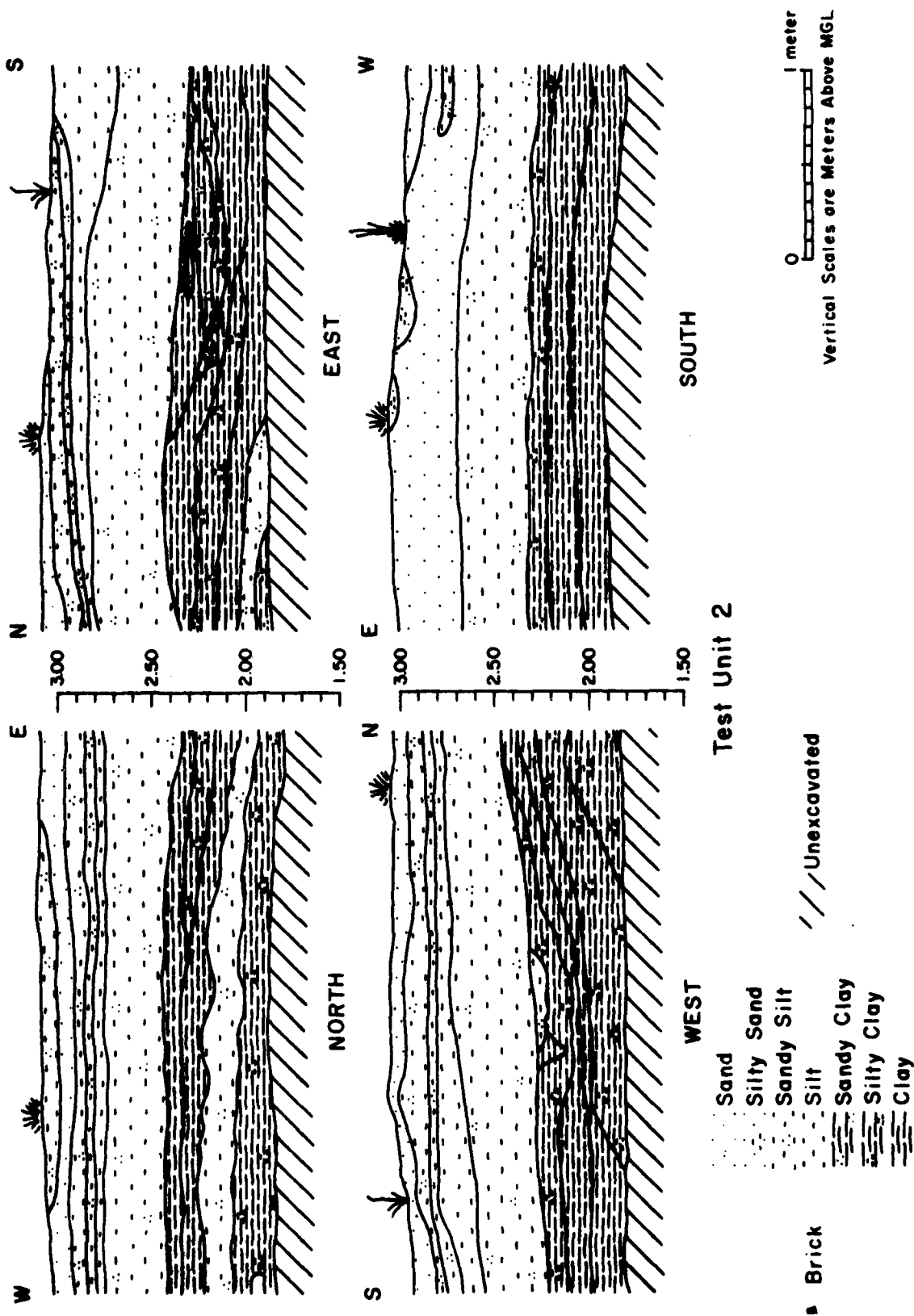


Figure 46. Test Unit 2.

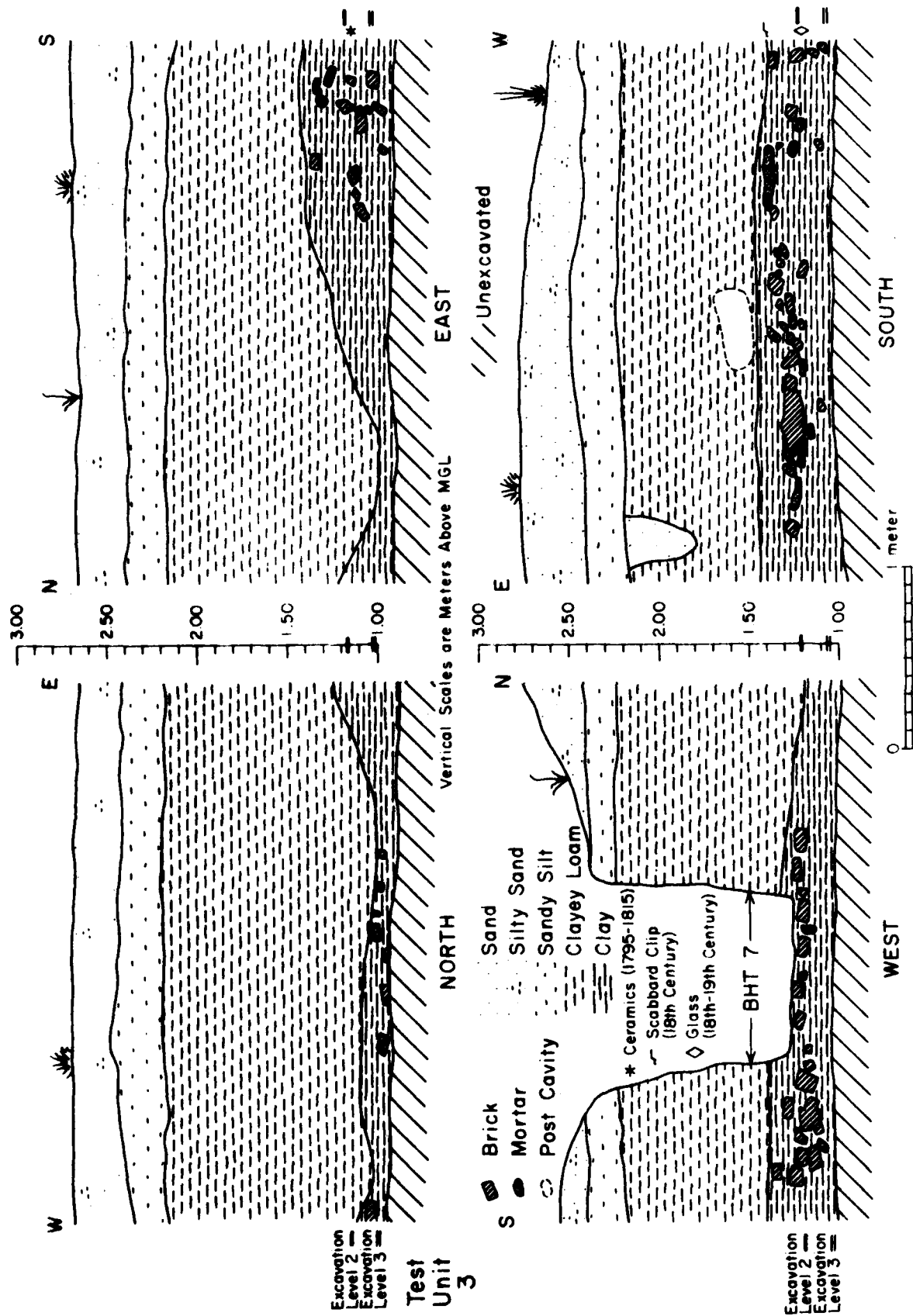


Figure 47. Test Unit 3.

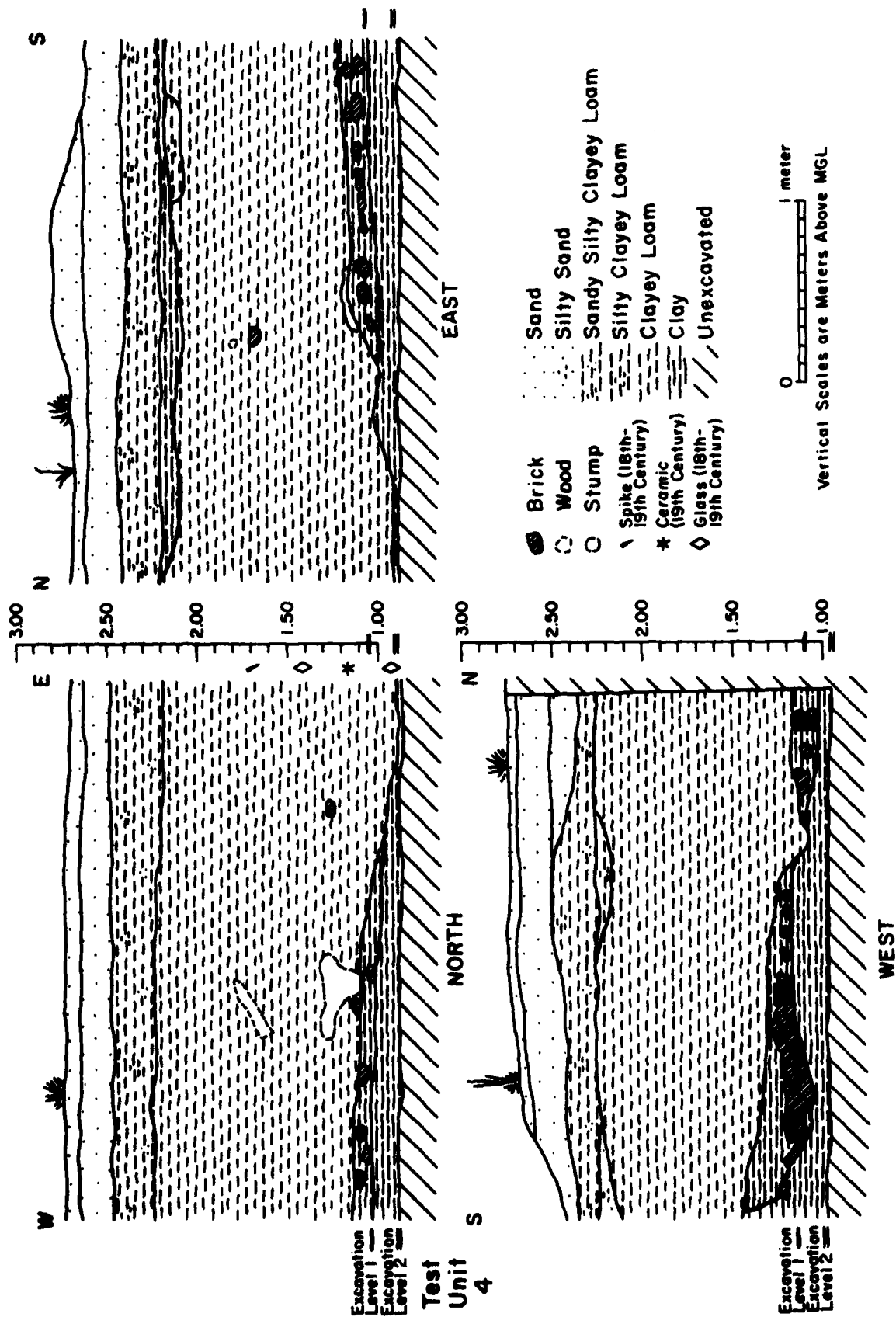


Figure 48. Test Unit 4.

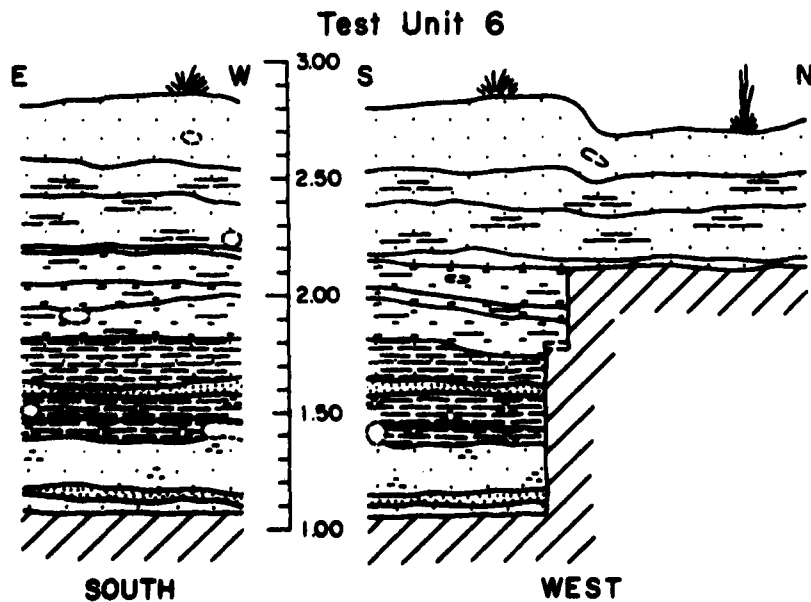
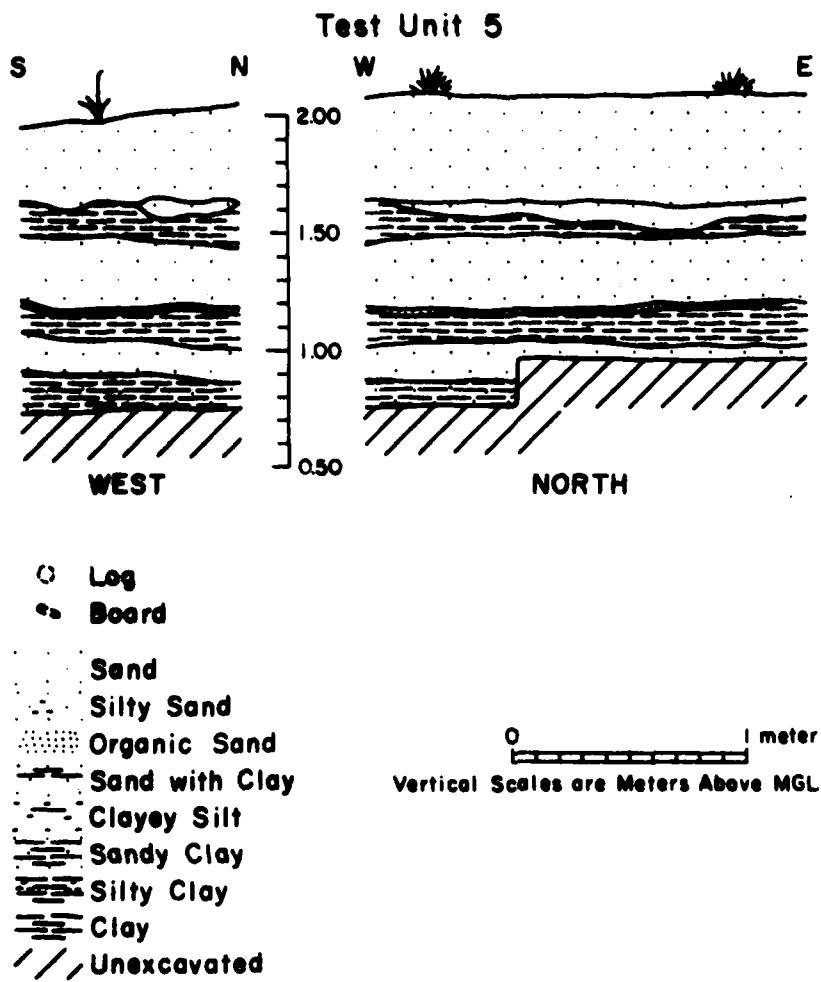


Figure 49. Test Unit 5, Test Unit 6.

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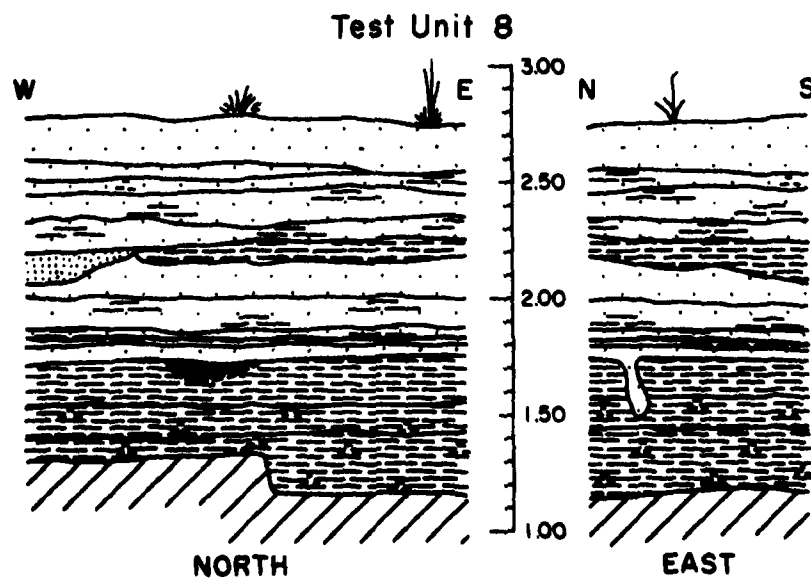
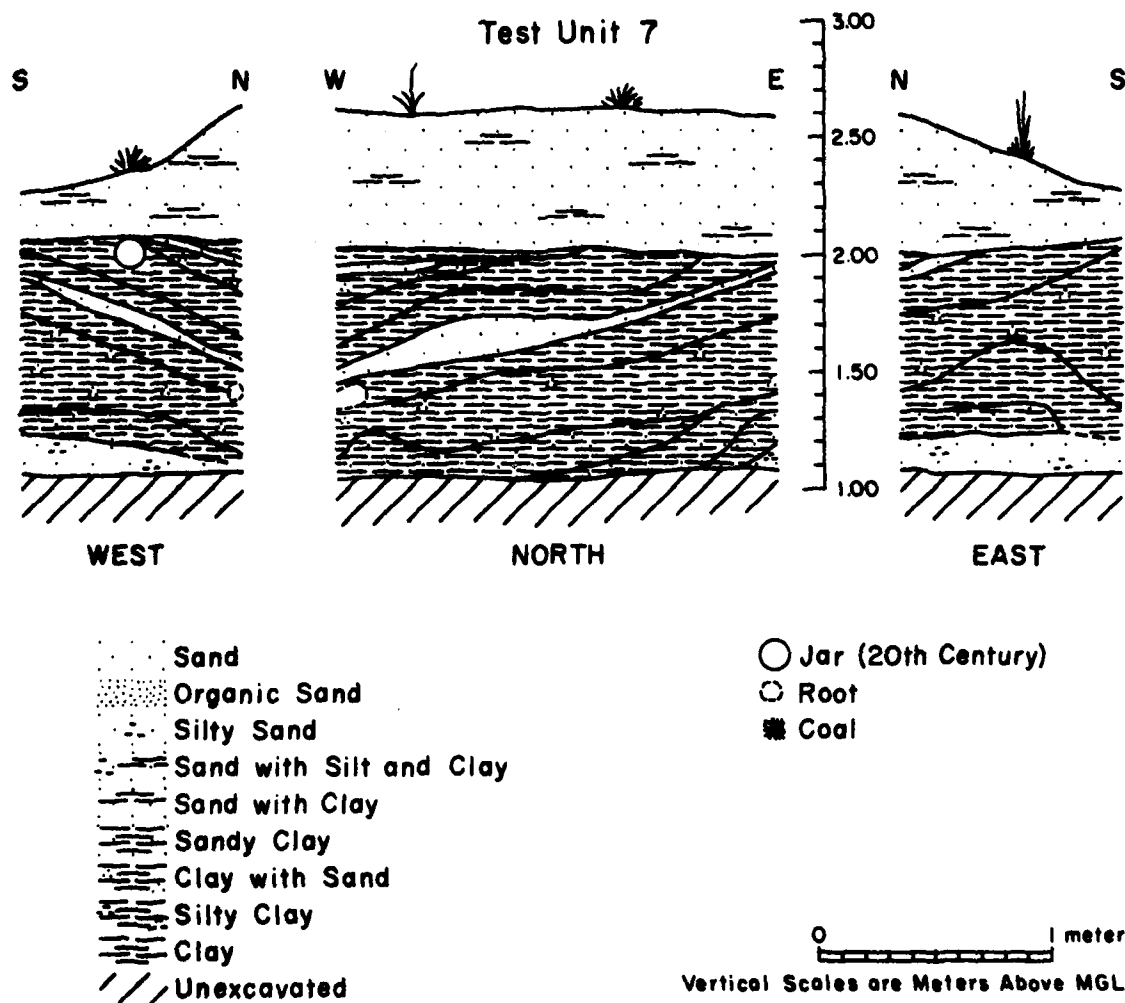
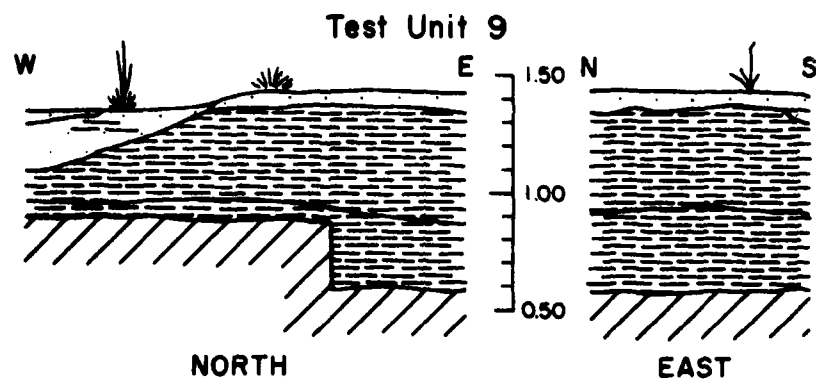


Figure 50. Test Unit 7, Test Unit 8.

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* Ceramic (1800-25)

Sand
 Sand with Clay
 Clayey Sand
 Clay with Sand
 Clay

0
0
1 meter

Vertical Scales are Meters Above MGL

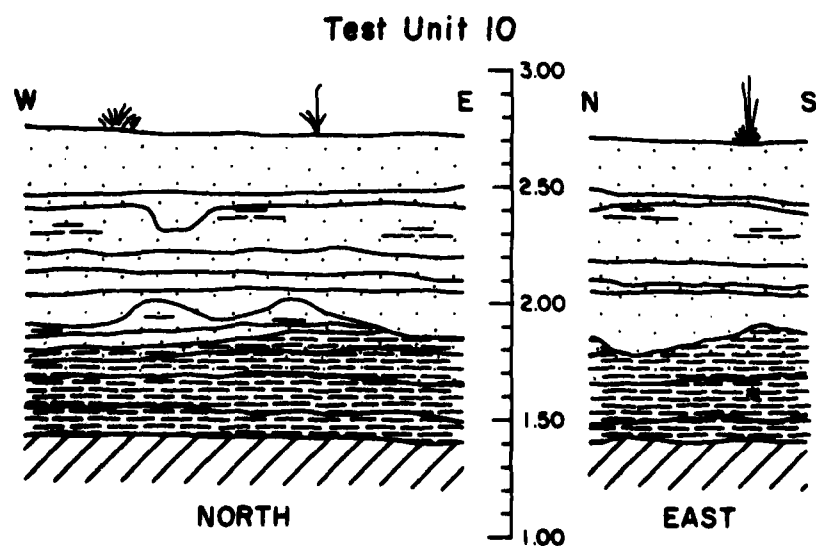
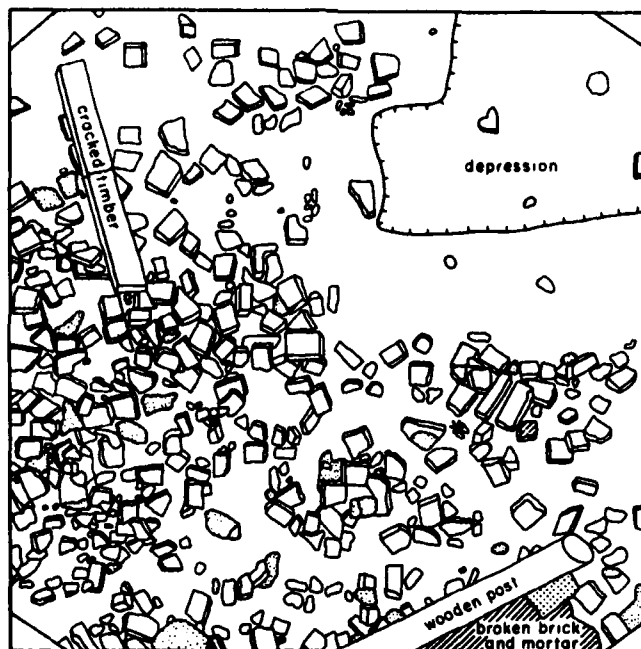
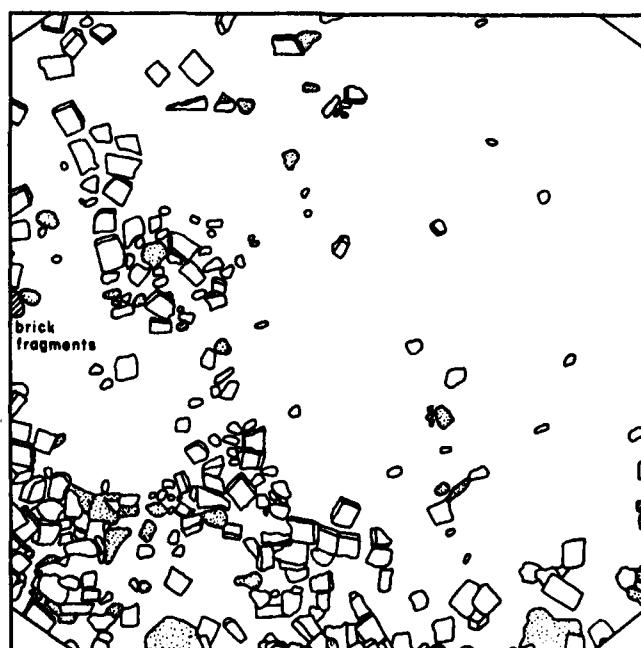


Figure 51. Test Unit 9, Test Unit 10.

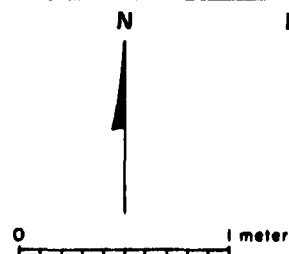
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Level 2



Level 3



- ◇ Brick
- Mortar
- ▨ Brick and Mortar
- ▩ Conglomerate
- Glazed Brick
- * Green Glass

Figure 52. Detail Test Unit 3

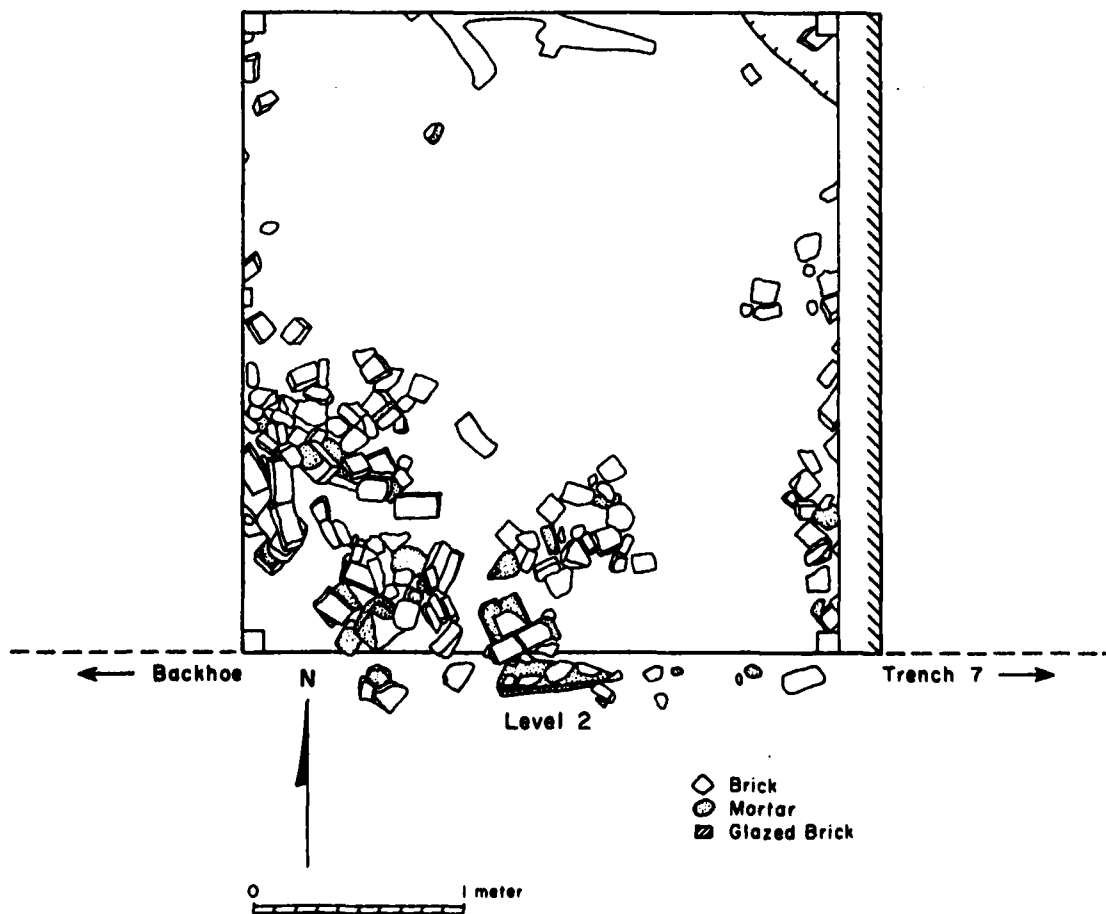
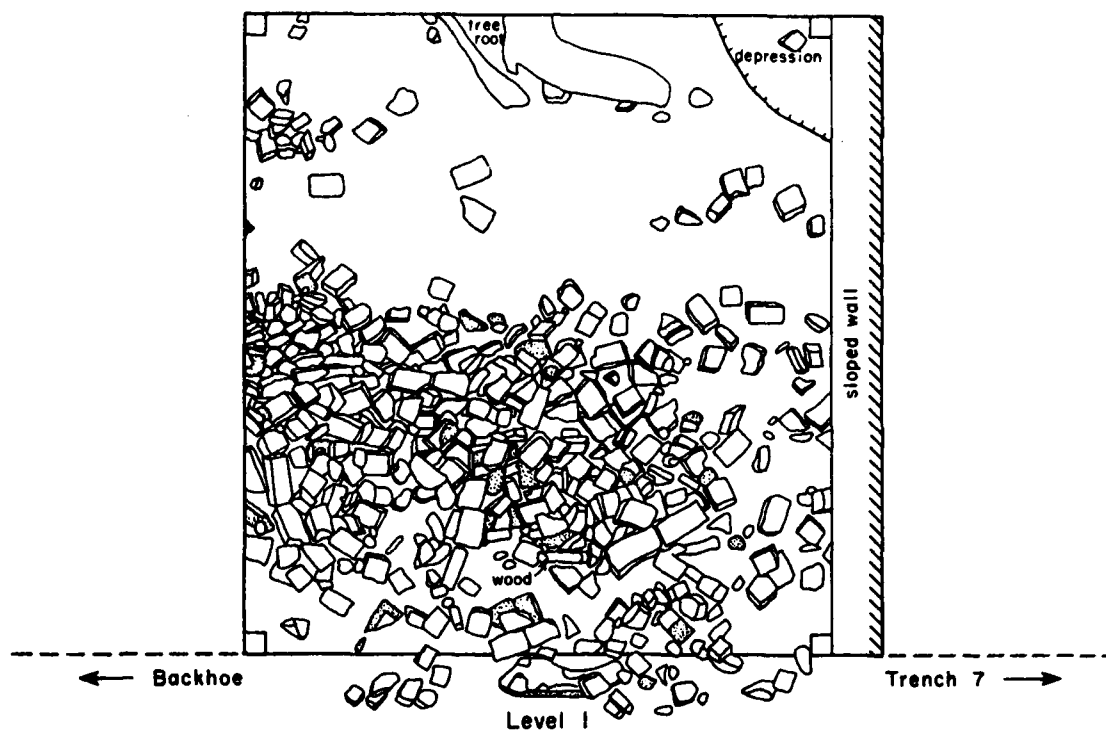


Figure 53. Detail Test Unit 4
317

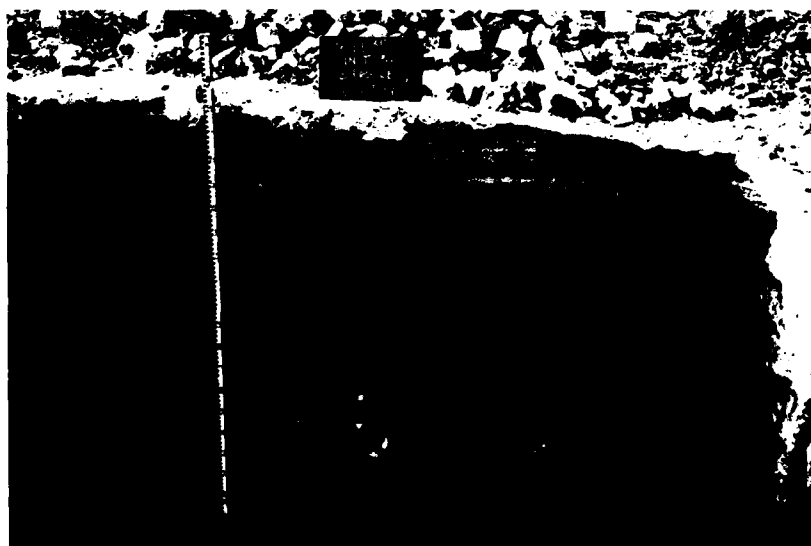
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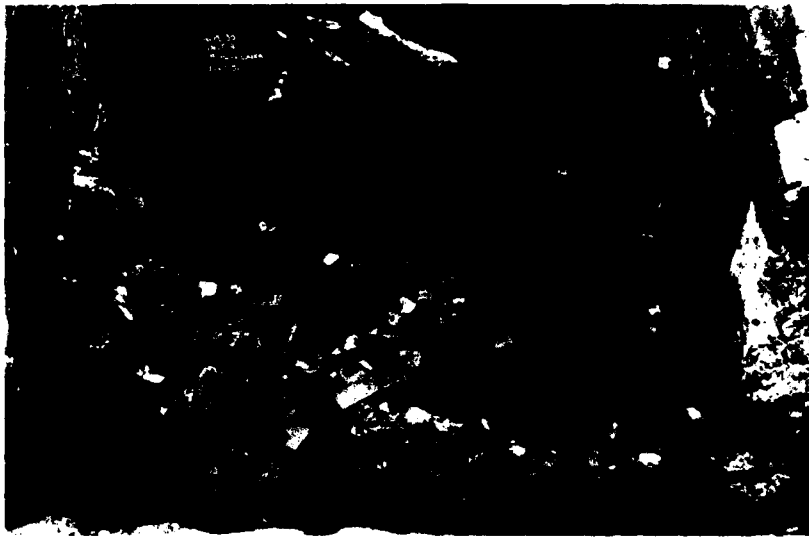


a. Organic zone interface, Unit 3; north arrow scale = 25 cm.

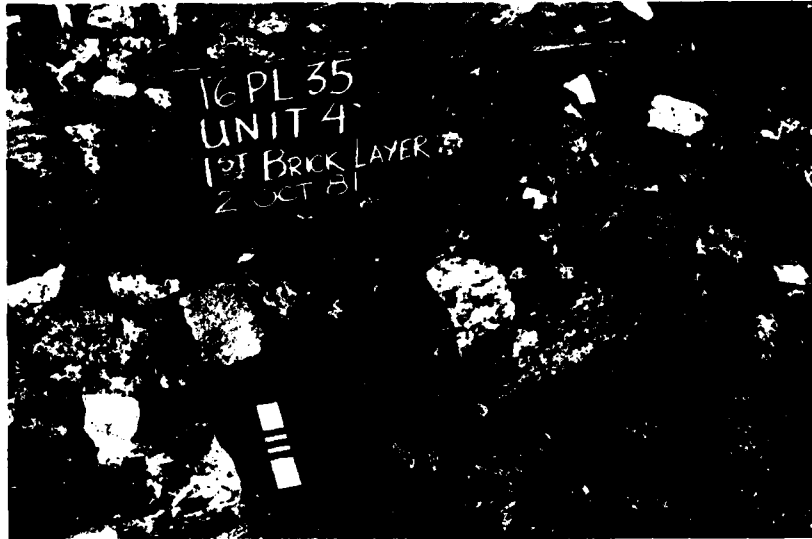


b. South profile, Unit 3; north arrow scale = 25 cm.

PLATE 1.



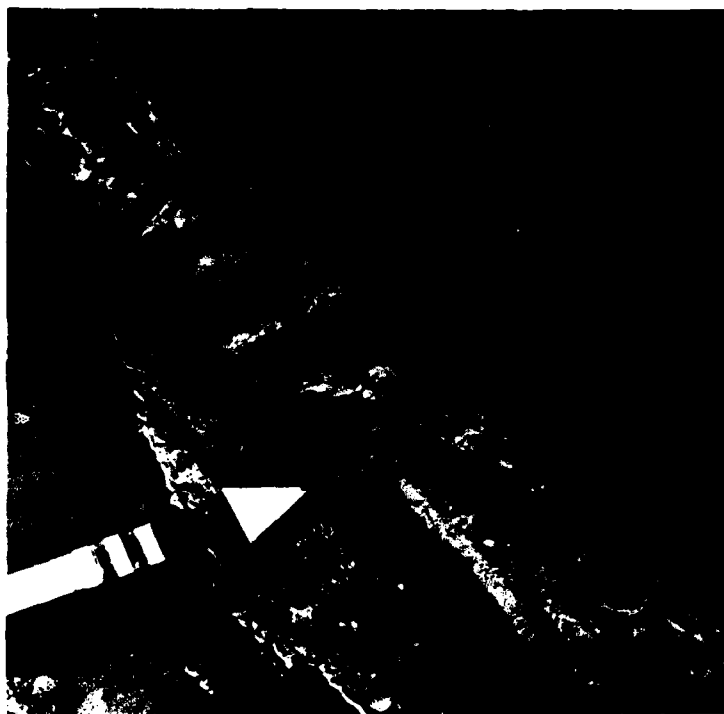
a. Second brick layer, Unit 4; north arrow
scale = 25 cm.



b. First brick layer, Unit 4; north arrow
scale = 25 cm.

PLATE 2.

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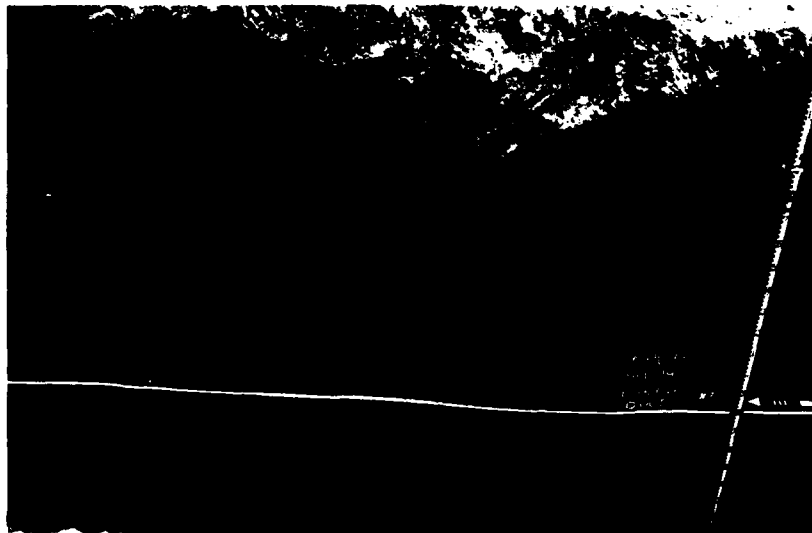


a. Backhoe Trench 9, north profile detail showing sticks (fascines?) in organic zone; north arrow scale = 25 cm.



b. Unit 7, organic zone, showing sticks (fascines?).

PLATE 3.



a. Backhoe Trench 19, east profile; north arrow scale = 25 cm.



b. Backhoe Trench 9, showing parabolic strata; north arrow scale = 25 cm.

PLATE 4.



a. Looking upriver.



b. Looking downriver.



c. Mortared brick concentration near riverbank.

PLATE 5.

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a. Looking upriver from English Turn Bend.



b. Profile recording of Backhoe Trench 8.

PLATE 6.

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